GENERAL PHONETICS

FOR MISSIONARIES & STUDENTS of LANGUAGES

G. Noel-Armfield.

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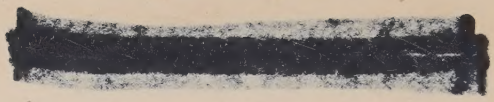

Mrs. G. R. Moore

GENERAL PHONETICS

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GENERAL PHONETICS

For Missionaries and Students of Languages

G. NOËL-ARMFIELD

SECOND EDITION REVISED

with an Appendix on the "Cardinal Vowels."

CAMBRIDGE
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AUTHOR'S PREFACE

THIS book has been prepared with the object of helping language students to enter their field of work with some means of coping with the difficulties they are likely to meet as regards foreign pronunciation. I have described more or less fully some four score of the main types of human speech-sounds, and have given some account of the chief phonetic phenomena.

The work makes no pretence to be anything like exhaustive of the subject, but it aims at being suggestive. I hope that students who read it and are led to feel interested in Phonetics will be incited to undertake a detailed study of the works of those authors who have specialised in some particular language or group of languages.

I have written mainly for those whose native language is English, and therefore the sounds of English are taken as what may be called the cardinal points of speech-sounds. It was necessary to fix upon some "dialect" of the language as a standard, and, after very serious consideration, I decided to adopt Southern English as my basis of comparison. This does not mean that I consider this dialect in any way superior to others, but that, as many of the best books on English Phonetics have been written with this as a standard, I thought it advisable to follow suit. From many points of view Northern English would have been preferable, especially from the fact that many of the Northern vowels differ but little from those of many foreign languages. The sounds of French would have

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been ideal as standards, but it would have been unwise to presume that all my readers were thoroughly acquainted with the phonetics of that language.

No verbal description of any sound met with in language will enable the student to reproduce it exactly, or even to be sure of recognising it when heard, but I hope that a study of this book will put into readers' hands some means of training ear, tongue and powers of analysis. Above all, I hope it will lead them not to accept as gospel the native teachers' flattering assurances that their pronunciation is quite correct, without being really satisfied that such is the case.

In a few cases I have found it necessary to use symbols not officially recognised by the International Phonetic Association. This is regrettable, but in the present disturbed state of the world, and of Europe specially, I thought it better to sacrifice phonetic uniformity and use make-shifts, in order that the book might be produced at a moderate price. The symbols authorised by the Association are given in the page containing script forms.

The diagrams illustrating the workings of the organs of speech will, I trust, be specially helpful. I am greatly indebted to my colleague, Mr. Daniel Jones, Reader in Phonetics in the University of London, and to the publisher of his "Outline of English Phonetics (for foreign students)," for the use of several beautifully drawn diagrams. Other diagrams are reproductions of such as I use myself in blackboard demonstrations. Special thanks are also due to Mr. Jones for much advice in the preparation of the book. He read through the whole of the MS. in its earlier

state, and has also made time to look through the proofs. What is blameworthy in my pages must be laid upon my shoulders.

I have also to thank Dr. Weitbrecht, late Secretary to the Board of Study for Preparation of Missionaries, for his encouragement, as well as for his kindness in writing a special preface.

And now I send my book into the world with the words

> "Goo, little book, God sende the good passage:
> And specially let this be thi prayere
> Unto them all that the will rede or here,—
> Wher thou art wrong, after ther helpe to calle,
> The to correcte in any parte or alle."

G. NOËL-ARMFIELD.

LONDON,
June, 1915.

PREFACE TO SECOND EDITION.

The call for a second edition of this book has given me the opportunity of making some important changes in the form of some of the phonetic symbols, for which in the previous edition makeshifts were used. No change in pagination has been made, the present issue can be therefore used side by side with the first edition.

In view of the importance of having definite vowel values to which all vowel sounds may be referred I have added an appendix on the "cardinal" vowels, which I hope will add to the value of the book.

G. N-A.

CAMBRIDGE,
July, 1919.

PREFACE

By the Rev. H. U. WEITBRECHT, Ph.D., D.D.

AS Secretary for the Board of Study for Preparation of Missionaries, 1911-1914, it was my good fortune to secure Mr. Noël-Armfield as lecturer on Phonetics during three Vacation Courses, at Oxford (1912), Cambridge (1913) and Oxford (1914). In this capacity Mr. Noël-Armfield laid more than a hundred missionary students under a deep debt of obligation, and letters from men and women now at work abroad have told of help received from his instruction. Enquiries, too, have reached me from time to time as to a manual of Phonetics suited for missionaries, and doubtless many will be grateful to Mr. Noël-Armfield for supplying them with a help which has hitherto been lacking.

In my article on "Language Study from a Missionary Standpoint" in *The East and the West* (July 1912), I endeavoured to show how a knowledge of Phonetics forms the true starting point in this task. It is obvious that in the development of language, speech precedes reading, writing, and knowledge of grammar. From this fact modern linguistic science has rightly concluded that, in the acquisition of a new language, utterance is the first thing to be mastered. To this end the student must learn first to identify the sounds that are heard, and next to reproduce them accurately. This is, in brief, the task of Phonetics, based on

investigation of the organs of speech and their action, resulting in classification of the sounds uttered, and giving guidance as to their reproduction.

As the organs of speech are identical in the whole human race, it follows that careful study of the sounds of one language will furnish a framework that may be extended and filled up in accordance with the requirements of others, provided that the principles agreed upon are rightly applied. While this book deals primarily with English speech-sounds, the experience gained by Mr. Noël-Armfield in teaching missionaries has enabled him to give hints regarding the sounds of various oriental languages, which will illustrate how the principles acquired in a study of English sounds may be applied to the tongues of the Mission Field. Chapter IX. on Assimilation and Dissimilation will help to explain the relation between the standard orthography of languages and their pronunciation, and Chapter XXII. gives useful guidance on the transcription of unwritten languages.

As regards the practical use of this book, the student must realise that, while useful preparatory work may be accomplished by its private study, it is impossible to acquire a thorough knowledge of Phonetics without attending practice classes and demonstrations. Information as to the instruction available is given in the "Bulletin of Studies," published as a supplement to the *Student Movement* in October, January and June of each year. The student will find a list of other books on Phonetics, together with a useful introduction by Mr. Daniel Jones, M.A. (Reader in Phonetics at London University) in Part II. of the

"Bibliography for Missionary Students,"* and I take this opportunity of expressing to Mr. Jones also gratitude for not a little help given to the Board of Study during my tenure of office as Secretary.

H. U. WEITBRECHT.

FOUNDERS' LODGE,
MILDMAY PARK.
June, 1915.

* Oliphant, Anderson and Ferrier.

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CHAPTER I.

SOME REASONS FOR THE STUDY OF PHONETICS.

1. It is difficult, though by no means impossible, for persons whose speech-habits are already formed to acquire a perfect, or practically perfect, pronunciation of a language not their own. A few individuals may learn to speak correctly by the faculty of imitation. Others learn to speak with considerable fluency, but with an imperfect accent.

2. Imperfection of accent may be overcome by the study of Phonetics, which may be described as the science which deals with the gymnastics of the organs of speech, both in theory and practice. This study is therefore essential to foreign missionaries and all students who have not learned the language, which they are to use, in their childhood. With few individual exceptions, it is by this study alone that persons whose speech-habits are fixed can acquire new ones and abandon at will those of their own tongue, producing those of the language under study, as it were by second nature.

3. It must be remembered that no two languages, no two dialects of the same language even, are absolutely alike in their speech-sounds, and that, although the sounds may be nearly alike, the differences between

them are sufficient for a "foreigner's" pronunciation to be unpleasant to the "native ear," even if mispronunciation does not lead to actual misunderstanding or to perversion of sense.

4. And indeed, mistakes both ludicrous and serious have been made through lack of observation on the part of the phonetically untrained. The neglect of a slight detail of tone, or the omission or insertion of some sound, practically inappreciable to the untrained ear, may entirely change the meaning of a word or a sentence. Thus in Burmese, we may wish to ask for a *portmanteau*, but if we use the wrong intonation we really call for a *frog*, both words being phɑ,[1] with this difference:—the word for frog is uttered with a falling tone, whilst that for a portmanteau has a level one. The question of tone is still more important in most dialects of Chinese, where words may have as many as six or more main meanings according to the musical variation in pitch. There is a case on record of a lady informing Chinese children that American soldiers ride on cats. This misunderstanding was due to the fact that she did not realise that the word mɑ meant *horse* with one tone and *cat* with another. In Uganda, we may order a man to be *killed* kuta instead of *released* kutha, the two verbs differing only in the aspiration of the t. Similar misunderstandings might be cited in most other languages, but the examples given above suffice to show the importance of speaking a language

[1] Underlined symbols are phonetic, not nomic. ph in phonetic symbols has not the value of our English digraph as in the word *phial*, but it indicates a p followed by a perceptible puff of breath.

correctly and of paying attention to minute details of tone and articulation.

5. It must not be thought that correctness of diction, from a grammatical point of view, is to be undervalued, but it must be acknowledged that, however correct a person's diction is as regards sentence-structure, he will not get at his hearers' hearts so well as if he sacrifices some measure of formal grammar, and as a compensation speaks with the tone and accent of the people he is addressing.[1]

---

[1] The Guernsey clergy are expected to be bilingual, to be able to preach and read in either English or French. All of them can do so, but those who really influence the people are men who can speak, in addition, the fine and vigorous Norman dialect.

CHAPTER II.

THE ORGANS OF SPEECH.

6. Before entering on the study of speech-sounds themselves it is necessary to have some knowledge of the organs of speech and their various parts. The following diagram will suffice for the purpose:—

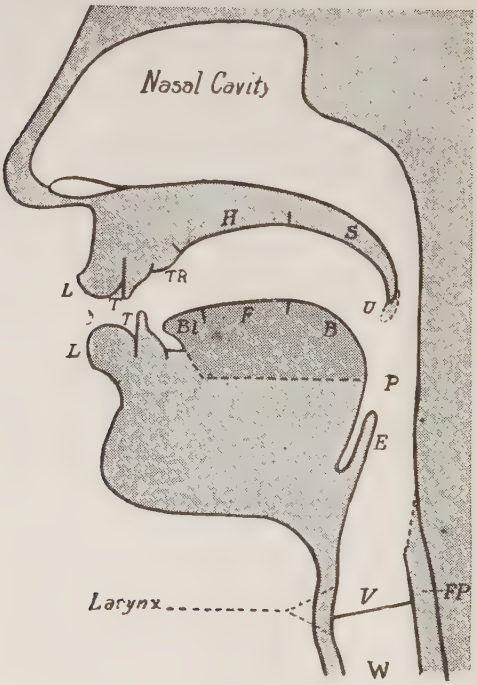

Fig. 1.[1]

W. The trachæa or windpipe.

V. The larynx, containing the vocal chords.

[1] Reproduced by permission from the "Outline of English Phonetics," by D Jones.

E. Epiglottis.

P. The pharynx.

The tongue, divided into:—

B. The back.

F. The front.

Bl. The blade (including the tip).

The roof of the mouth, divided into:—

U. The uvula.

S. The soft palate or velum.

H. The hard palate.

TR. The teeth-ridge.

TT. The front teeth.

LL. The lips.

The nasal cavity.

7. Strictly speaking, one should add to the list of the organs of speech the lungs, which are not shown in this diagram, in spite of their importance as breath producing organs. The lungs are organs without which speech, as we understand it, could not exist. Breath is the life of human speech as it is of human existence. Any one, or even more than one, of the other speech-organs might be removed and yet a workable form of speech would still remain possible.

8. In the ordinary breathing of a normally healthy person expiration and inspiration are practically inaudible, the passages from the lungs to the nostrils or the lips being quite free and unobstructed. We are conscious of the passage of the breath to and from the lungs only when abnormal conditions arise and some form of friction is set up, which makes itself perceptible to the ear. Such conditions are found when we have a cold which partially closes the

passages and produces the bronchial rattle or snorting or sniffing. Similarly, when we are asleep the velum may become relaxed, with the result that with every indrawing of the breath the sound known as snoring is produced. Such sounds as these, it is needless to say, are involuntary, and cannot be classed as speech-sounds. How, then, are speech-sounds, which are voluntary, produced? Breath is converted into speech by the intentional, though perhaps unconscious, modification of the shape of one or more of the passages, from the larynx upwards, through which it passes.

9. The breath-stream may be modified and converted into speech-sounds at an infinite number of places, but for practical purposes it is not necessary to distinguish more divisions than these indicated in Fig. 1.

10. The first point at which speech-modification of the breath takes place is in the larynx. The larynx contains a pair of lips called the **vocal chords,** which can, if desired, be brought very close together, without entirely closing them, so that they are set in vibration by the air-current and produce musical sound. This sound may vary in pitch according to the rapidity, and in loudness or intensity according to the extent or amplitude of the vibration. This musical modification of the breath is called in the language of Phonetics **voice**[1], and speech-sounds consisting of or accompanied

[1] The vibration of the vocal chords can be tested in several ways: (1) If the Adam's apple is firmly pressed with the finger and thumb, the vibration of the chords will be distinctly felt during the emission of voice; (2) if both ears are stopped, voice will produce a buzzing in the head; (3) if the palm of the hand is pressed on the crown of the head, vibration will be felt when the vocal chords are working; (4) a small pill-box, containing a metal ring, laid against the side of the Adam's apple, will produce a rattle for voiced sounds.

by voice are known as **voiced.** Sounds not so accompanied are called **breathed** or **voiceless.**

11. Were this the only modification possible, human speech would be little more than the song of the bird, a series of musical sounds varying in pitch and intensity. Doubtless a workable form of speech might have been evolved from combinations of these sounds, but Providence has seen fit to give us the double power, not only of expressing ourselves musically, and of thus giving vent to our emotions, but also of uttering words with which we can communicate our best (and also our worst) thoughts to our fellow-men.

12. In nearly all parts of the mouth[1] we have mobile organs, which can so modify the breath-stream as to give rise to an enormous variety of sounds. Thus the upper and lower lips, meeting together, may for a moment completely block the stream of air coming from the lungs. When the lips are separated the imprisoned air rushes forth with a kind of explosion, and we produce a sound represented in ordinary spelling by the letter *p*. There are other places at which the breath may be penned-up prior to a sudden release. The sound of the letter *t* in the word *eat* is produced by checking the breath with the tip of the tongue pressed (for the English pronunciation of this sound) against the ridge of the upper gums; in the sound represented in writing by *k* a stoppage of the breath is produced by the meeting of the back of the tongue and the soft palate.

13. But the making of a complete stoppage is by no

[1] The lips are here included as parts of the mouth.

means the only way in which we can convert breath into speech. We may do no more than narrow the passage in any given place so as to produce a rubbing of the breath in the narrowed passage, giving rise to audible friction. The blade of the tongue, placed against the teeth-ridge in such a manner as to leave a narrow passage for the breath, produces, according to its position and the degree of narrowing, the sounds of *s* in *sum*, of *sh* in *shame*, of *r* in *ring*, or of *l* in *leave*.

14. Certain very flexible organs can be set in violent vibration by the current of breath. Such organs are the lips, the tip of the tongue and the uvula. The sounds formed by vibration of the tongue or of the uvula are amongst the varieties represented in most languages by the letter *r*. The one produced by the vibration of the tip of the tongue is that which is heard in Scotland, and the uvular variety is the *r* heard on the banks of the Tyne (known as the Northumbrian "burr"). Amongst the varieties produced by rapid lip vibration are the sounds made by a groom when curry-combing a horse, and the Danish equivalent to *woa*.

CHAPTER III.

THE TWO MAIN CLASSES OF SPEECH-SOUNDS.

15. The sounds uttered in human speech divide themselves into two main classes—**vowels** and **consonants.**

16. A vowel is a voiced sound in the production of which the breath has free passage through the mouth (or mouth and nose) without producing any audible friction.[1]

17. All other sounds are consonants. This may seem rather a negative kind of definition, and therefore something which it is hoped will satisfy those, who demand positive statements, is given. A consonant may be described as a speech-sound produced by the complete or partial obstruction of the breath in such a way as to give rise to explosion, audible friction or rolling in any passage from the larynx upwards, such sound being accompanied or unaccompanied by voice.[2] It will be found useful to regard a consonant as consisting of three parts—the **obstruction**, the **stop**, and the **release**.[3]

---

[1] It must be understood that whispered sounds are here excluded from consideration. In comparison with a true vowel a whispered vowel is of a consonantal type, i.e. there is audible friction in its production. (See § 136.)

[2] This attempt at definition of a consonant leaves much to be desired. The sounds of *m*, *n* and *ng* hardly fall within it, as in their production audible friction is almost absent, and if they are breathed only, instead of being accompanied by voice, they are inaudible at a very short distance. The fact is that there are some speech-sounds which lie so near the border line between vowel and consonant that it might be well, in spite of the unscientific nature of the term, to describe them as semi-vowels or semi-consonants. My colleague, D. Jones, of University College, London, hears no friction in the production of these so-called consonants. I, for my part, think that I hear not only friction, but even a weak explosion when consonants of this type are fully uttered. Even in the production of vowels there may be some degree of audible friction, especially in the case of those the character of which is the result of the placing of some part of the tongue very near the roof of the mouth.

[3] In some languages, e.g. Chinese of Canton, no audible final release can be detected. Inaudible release is not uncommon in English.

CHAPTER IV.

THE PHONETIC ALPHABET AS APPLIED TO STANDARD ENGLISH.

18. Before attempting to study the speech-sounds of a foreign language it is essential that we should be able to identify, classify and analyse those of the mother tongue. We shall therefore begin the study of speech-sounds by seeing what are those which we make use of in our daily speech, into what classes they fall, and how they are produced.

19. It has been ascertained that in the speech of the average educated Southern Englander there are 38 distinct and well-defined varieties of speech-sounds. It is with this type of pronunciation that I propose to begin, and henceforth we shall look upon it as "Standard English." To represent these 38 sounds in ordinary writing we have an alphabet of 26 letters, some of which are redundant. For example, *c*, in the word *city*, could be replaced by *s*; in the word *cuckoo*, *k* would be a perfect substitute for *c*. The letter *q*, which is always followed by *u*, also has the value of *k*; and *x* is an instance of a letter which is not only unnecessary, but which, like other letters of our alphabet, has not a fixed value, as is exemplified in the words *exercise*, *exert* and *Xerxes*.[1] Most of our other alphabetic signs

[1] I should like here to anticipate an objection to the statement that such letters are redundant. It is frequently urged that any change in the spelling obscures the history of a word. Does the Spanish philologist forget the Latin *filium* when he sees *hijo*, or does the Italian scholar fail to see that *filosofo* comes

also have more than one value. To take as an instance the letter *g*, we find that it has quite different values in identical positions, as in the words *gin* and *begin*; whilst after *n*, as in the word *ring*, it merely indicates that the nasal consonant is not a true *n*, and it is silent in *gnome*. Again, our five vowel symbols have, by means of various orthographical devices, to do duty for no less than fifteen distinct vowel sounds. This would be a matter of little moment if we were moderately consistent in our use of these devices, but we are so unsettled in our so-called orthography that we have more than two hundred and fifty ways of spelling our fifteen vowel sounds, and over a hundred and sixty ways of writing our twenty-three consonant sounds.[1]

20. Now, for anything like an accurate study of speech-sounds we must have some definite and consistent way of representing them, just as for the study of numbers we find it necessary to use symbols, the values of which are fixed. Consequently, to represent the sounds of English we require an "alphabet" of 38 symbols, to each of which is assigned a fixed value, on the principles of "one sign one sound" and "one sound one sign." Such an alphabet is said to be **phonetic.**

21. The most suitable phonetic alphabet hitherto devised, the most convenient for general use in the

from the Greek φιλόσοφος through the Latin? On the contrary the spelling introduced by "learned idiots" has often done all it could to obscure the history of a word, as is instanced by the accepted spelling of the word *doubt*.

[1] See "Introduction to the Study of Phonetics," by L. Soames, Macmillan.

transcription of all languages, and the one most widely adopted, is that of the International Phonetic Association[1], which I now give as applied to the English spoken by educated Southerners. As far as is possible I take for "key-words" those which are already phonetically spelled, the phonetic symbol having the value of the italicised letter (or letters).

CONSONANTS.

Phonetic Symbol.	Key Word.	Phonetic Spelling.
1. p	*p*ip	pip
2. b	*b*ib	bib
3. t	*t*it	tit
4. d	*d*id	did
5. k	*k*in	kin
6. g	*g*ig	gig
7. m	*m*id	mid
8. n	*n*ip	nip
9. ŋ	ki*ng*	kiŋ
10. l	*l*ip	lip
11. r	*r*ib[2]	rib
12. w	*w*it	wit
13. f	*f*it	fit
14. v	*v*ivid	vivid
15. θ	*th*in	θin
16. ð	*th*is	ðis
17. s	*s*it	sit

[1] Many hundreds of books which employ this alphabet have been published and are in use throughout the world. A list of these publications can be found in "The Principles of the International Phonetic Association," obtainable from D. Jones, University College, London, W.C.

[2] This is the rolled or trilled variety of r as heard in Scotland.

Phonetic Symbol.	Key Word.	Phonetic Spelling.
18. z	*z*est	zest
19. ʃ	*sh*ip	ʃip
20. ʒ	vision	viʒn
21. ɹ	*r*ib[1]	ɹib
22. j	*y*et	jet
23. h	*h*it	hit
	VOWELS.	
1. iː[2]	*ea*st	iːst
2. i	*i*mp	imp
3. e	*e*nd	end[3]
4. æ	h*a*t	hæt
5. ɑː	Sh*ah*	ʃɑː
6. ɔ	h*o*t	hɔt
7. ɔː	h*au*l	hɔːl
8. u	p*u*t	put
9. uː	p*oo*l	puːl
10. ʌ	n*u*t	nʌt
11. əː	b*ir*d	bəːd
12. ə	vill*a*	vilə

[1] This sound is unaccompanied by any rolling or trilling of the tongue. Where no confusion can arise the symbol r may be used instead of ɹ to indicate the non-rolled variety. A similar convention holds good for the written representation of speech-sounds in general, i.e. non-significant varieties of the same sound need not be indicated in a *practical* transcription. For instance, no matter what variety of *r* sound is used in pronouncing the English word *rib*, the meaning remains unchanged. But in such a language as Spanish the meanings of words may be altered according to the type of *r* used. Thus *pero* peɹo means *then*, whilst *perro* pero signifies *dog*.

[2] ː indicates that the sound represented by the preceding symbol is relatively long.

[3] The representation of our English short e is under consideration. From many points of view it would seem advisable to

VOWELS HEARD USUALLY ONLY IN DIPHTHONGS IN SOUTHERN ENGLISH.

Phonetic Symbol.	Key Word.	Phonetic Spelling.
13. a[1]	*a*isle	ail
14. ɛ[2]	p*a*ir	pɛə
15. o[3]	boat	bout

CHAPTER V.

CLASSIFICATION OF ENGLISH CONSONANTS.

22. Consonants may be classified in three main ways, the first of which is based on the *manner* of their production. It will be noticed that in the production of those numbered 1 to 6 the air passage is completely closed at some point and the outcoming breath is thus momentarily pent up. When the passage is suddenly

write the sound of the word *get* with the Greek symbol ɛ̲. Our sound is undoubtedly nearer to the vowel heard in the French word *père* than that of the German word *See*. Pronunciation, however, varies very much. At the present time some of our foremost phoneticians favour the symbol e̲. It would be an advantage to have entirely new type for this English sound. In this work, however, I shall use e̲ for the vowel of such words as *get*, as well as for the first element of the diphthong heard in the word *fate*.

[1] In the pronunciation of Northern English a̲ replaces æ̲.

[2] ɛ̲ is found instead of e̲ in Northern English.

[3] In Northern English and Scottish pronunciation o̲ː replaces the diphthong o̲u̲. This vowel may also be heard in pure Southern English when quite unstressed, in such a word as *November* novembə.

opened a slight explosion takes place. Hence the consonants p, b, t, d, k and g are called **plosive** consonants.

23. In the utterance of m, n and ŋ the oral passage is stopped as for the plosives b, d, g respectively, but the air passes outwards through the nose, the passage thereto being opened by the lowering of the velum. These sounds are therefore known as **nasal** consonants.[1]

24. In English, l stands in a class by itself. In its production the air passage is blocked in the middle, but an opening is, or openings are, left at the side between the edge or edges of the tongue and the back teeth. Therefore l is called a **lateral** consonant.[2] Our l frequently has a double articulation. The front part of the tongue is in contact with the hard palate, and the

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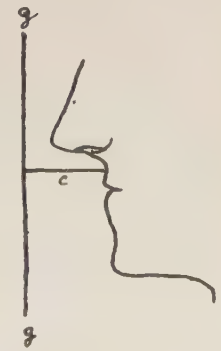
[1] The passage of the air through the nose may be easily demonstrated by smokers who inhale. If, after inhaling, they pronounce m, n or ŋ they will clearly see that the nasal passage is open, whilst the oral is closed. Non-smokers may prove the passage of the air through the nose with the aid of a visiting card and a piece of cold glass, as shown in the accompanying diagram. One edge of the card should be placed horizontally under the nose, against the upper lip; the other should be pressed against the glass. When these nasal consonants are uttered it will be found that only the portion of the glass above the card will be dimmed by condensation of the moist breath.

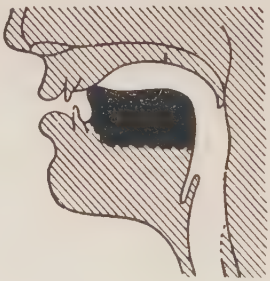


gg Glass. *c* Card.

Fig. 2.

[2] If the air be breathed *in* with the tongue in the position for l, the passage of the cool air along the side or sides of the tongue will be distinctly felt. (For the main varieties of *l* see § 89 sq.)

middle presents a rather hollow surface, whilst the back approaches the soft palate somewhat in the position for the vowel u. This gives l a peculiar "timbre," which is particularly noticeable at the end of such words as *table* teibl, *people* pi:pl, and *hopeful* houpfl, or *awful* ɔ:fl.[1] The figure below illustrates the tongue position of l in these words. Acoustically, it makes practically no difference whether the sound is produced through one or two side passages.



Tongue position of "dark" l.
Fig. 3.[2]

25. r, like l, is alone in its class in our language. In its production the tip of the tongue makes a rapid succession of taps against the teeth or the teeth ridge, producing a rolling sound. Therefore r is said to belong to the **rolled** class of consonants.[3] A large

[1] For explanation of ˡ see § 63.

[2] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

[3] Many people think that they cannot make this kind of r. No one, whose speech organs are normal, is really incapable of making it, or any other kind of rolled sound occurring in human speech. Persistent practice is all that is required after the manner of production is once understood. (See § 93.) The acquirement

proportion of speakers of Southern English rarely use this consonant.

26. The remaining twelve consonants are produced by the friction of the breath in some narrowed passage and are known as **fricatives.**

27. Secondly, consonants may be classified according to the organ articulating them. Those which are the result of breath modification, produced by the action of the two lips, are called **labials**, or, more strictly, **bilabials.** Such are p, b, m and w.[1] If the lower lip acts in conjunction with the upper front teeth, as in the case of f and v, we have what are known as **labio-dental** consonants.

28. In the case of those consonants, in which the action of the tongue plays a prominent part, it is usual to omit the prefix **linguo-** and use a nomenclature which indicates that part of the roof of the mouth, which the tongue approaches or touches in their production. Tongue-tip or tongue-blade consonants, such as t, n, s, θ and their voiced fellows, are called **dentals.**[2]

29. The only normal English consonant formed by

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of this sound is very important. There is, perhaps, no sound the mispronunciation of which is so objectionable to a native ear as that of any of the varieties of the so-called *r*.

[1] w has, like l, a double articulation, the back of the tongue being raised to the u position. This is important, as in some languages two varieties of l and w are found. (See §§ 90 and 95.)

[2] Strictly speaking, our so-called dentals, with the exception of θ and ð, are not true dental, but **alveolar** sounds, being formed at, or near the alveolus, or the ridge of the upper gums. There are also certain tongue-tip and tongue-blade consonants which are produced near the junction of the hard and soft palates. (See § 129.)

the tongue-front and the hard palate is the sound of the letter *y* in *yes*, jes, for which the symbol j is used in phonetic script. j is a **palatal** sound.

30. Those consonants which are formed by the tongue-back and the soft palate or velum, namely k, g and ŋ, bear the name **velar.**

31. We have, as a rule, in English, only one consonant sound produced in the larynx, namely h. This is known as **glottal.**[1]

32. The third and last classification of consonants depends on the absence or presence of the vibration of the vocal chords during the emission of the sounds. p, t, f and θ, for instance, are unaccompanied by voice produced by this vibration, and are therefore called **breathed, voiceless,** or **unvoiced** consonants. Their similarly articulated fellows b, d, v and ð are accompanied by the vibration of the vocal chords, and in consequence they are known as **voiced** consonants.

33. The English consonants can now be tabulated so as to shew at a glance (1) where they are produced, (2) how they are produced, and (3) whether they are unvoiced or voiced. In the table given below the unvoiced consonants are underlined.

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[1] In individual cases, and especially in the East End of London, a glottal plosive, the Arabic *alif-hamza*, may be heard. Indeed, it is by no means uncommon as a substitute for t between two vowels, and before l and r. It is also found with similar usage in many parts of the country, including Norfolk, and it is quite regular in the Glasgow dialect. In German Bühnenaussprache, or stage-pronunciation, it is the initial sound of all important words beginning with a vowel symbol. The phonetic symbol is ʔ, the use of which may be illustrated by the pronunciations keʔl and θəːʔiːn for ketl and θəːtiːn *kettle* and *thirteen*.

TABLE OF ENGLISH CONSONANTS.

	Labial	Labio-dental.	Dental.	Palatal.	Velar.	Glottal.
PLOSIVE	p b		t d		k g	
NASAL	m		n		ŋ	
LATERAL			l		(l)	
ROLLED			r			
FRICATIVE	w	f v	θ ð s z ʃ ʒ ɹ	j	(w)	h

The two consonants l and w, which appear twice in the table, have a double articulation.

34. It will be noticed that the unvoiced and voiced consonants generally arrange themselves in pairs. The voiced exceptions are the three nasals m, n, ŋ, the lateral l, the rolled r, and the fricatives w, ɹ and j, which are found as a rule in the voiced form only. The unvoiced forms occur regularly in some languages, and may be heard occasionally in English. They may be indicated, when needful, by placing a small circle under the symbol for the corresponding voiced form, thus: m̥, n̥, ŋ̥, l̥, r̥, w̥, ɹ̥, j̥, the sign ̥ being pictorial of the open glottis. The one unvoiced consonant, which as a rule has no companion, is h. A voiced form is however frequently present, though hardly detectable by the untrained ear, between two vowels, as in the words *aha* and *perhaps*. ɦ is used as the phonetic symbol for the voiced h[1].

For fuller details of English consonant sounds see "The Pronunciation of English," D. Jones. See also Script Forms of Special Phonetic Letters.

35. To the student who is phonetically untrained it might seem that two very frequently heard consonants are omitted from the list. These are the sounds so often spelled by the letters *ch* as in *church* tʃə:tʃ, and by *j* or *dg* as in *judge* dʒʌdʒ. The blending of the two consonants is so intimate that many people receive the impression of one consonant sound only. If, however, we compare the acoustic effect of the combination of t and ʃ in the word *church* with that heard in the words *that shows* ðæt ʃouz, we shall realise that there are two tongue positions for each combination, but that in the former the blending is much more intimate. The t and ʃ of *church* belong to the same syllable, whilst those of *that shows* belong to different syllables.[1] (See § 59.)

CHAPTER VI.

CLASSIFICATION OF ENGLISH VOWELS.

36. The vowels, like the consonants, can be classified in more than one way. Of course, as a vowel is

[1] Many people, even amongst those phonetically trained, are convinced that the *ch* of *church* is a simple sound, i.e. one having a definite obstruction, a period of closure and a release. I am quite unable to agree with them. To me it is plain that there is a complete stop, the relaxation of which gives rise to a weak plosion, followed by friction produced by an almost imperceptible lowering of the tongue. In my own case the complete stop is made with the tip of the tongue in the alveolar position, the blade being already in place for the fricative ʃ, which finds outlet by a slight lowering of the tongue-tip. If the order of the sound is reversed, and *that shows* is pronounced ʒuoʃ tæð, it can hardly be doubtful that there are two distinct

essentially a voiced sound[1], we can have no classification corresponding to the unvoiced and voiced of the consonants, but we shall find that there are sub-classifications which will allow us to regard vowels from different points of view.

37. The first determining factor of the class into which we put a vowel is the part of the tongue by means of which the breath stream is so modified as to produce a characteristic sound. If, in the production of any given vowel sound, the tongue-front is the highest part, such vowel is called **front**. In our own language these vowels are a, æ, ɛ, e, i and iː. Figure 4 shows the tongue positions for the chief front vowels.

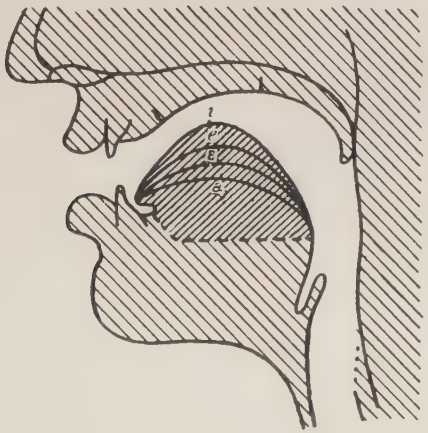

Fig. 4.[2]

sounds. Instrumental phonetics will doubtless solve this problem before long.

[1] There are, however, whispered and breathed "vowels." (See § 136.)

[2] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

Should the tongue-back be the highest articulating division the vowel is known as **back,** those of English being ɑ, ə, ə: ʌ[1], o, u and u:. The positions of the tongue for the chief back vowels is shown in Figure 5.

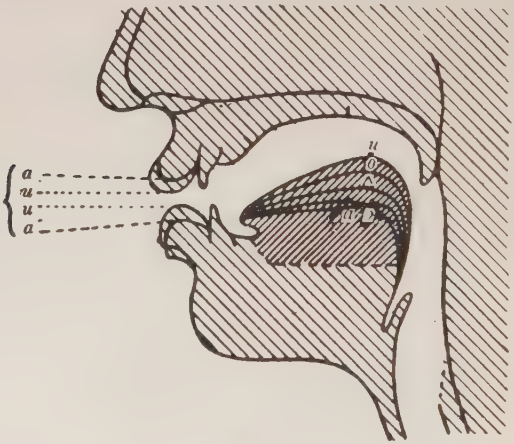

Fig. 5.[2]

If the vowel is produced by an intermediate part of the tongue in the highest position we speak of the resulting vowel as **mixed.** In English, ə and ə: belong to this class.

38. The second factor which determines the class

[1] It seems to me that it is not quite certain whether ʌ should be definitely classed amongst the back vowels. In my own case it is certainly so, but I have found that, in the case of foreigners, acoustically identical vowels could be produced with the tongue in the mixed position. This result was undoubtedly obtained by a variation in the accompanying lip position. It is doubtful also if English ɑ is a true back vowel.

[2] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

into which a vowel should go is the amount of space left open between the tongue and the palate. For this purpose we divide the space between the widest and the narrowest passage capable of giving rise into a vowel sound into two main imaginary parts. These we call **open** and **close.** Types of open vowels are a and ɔ. i and u are typical of close vowels. It is convenient to make two sub-divisions, to which, for want of better names, are given those of **half-open** and **half-close.** To the former class belongs ɛ, and to the latter o.

39. A third classification depends upon the lip-position. If we watch the changes in the formation of the lips as we pass from the vowel ɑ: to the vowel u:, we shall notice that with each degree of the raising of the back of the tongue there is a corresponding (or, as it may be called, sympathetic) rounding and protrusion of the lips. This rounding is accompanied by a reduction of the size of the opening between the lips. On the other hand, in the utterance of the front vowels from a to i: this lip-rounding is absent, though other characteristic changes in shape may be noticed. We therefore classify our vowels as **rounded** and **unrounded** vowels.[1]

40. It is now possible to draw up a table of English vowel sounds, similar to the table of consonant sounds in § 33. In this table we can see at a glance (1)

[1] In our own language the front vowels are unrounded and most of the back vowels are more or less rounded. It will be seen, when some foreign vowel sounds are dealt with, that the position of the lips is not always in sympathy with that of the tongue, and therefore a sub-division will be added to the vowel classification, *viz.* **front-rounded** and **back-unrounded.** (See § 109 sq.)

whether a vowel is front or back, (2) whether it is pronounced with or without lip rounding, and (3) what is the degree of the opening of the breath passage. An additional classification will be made under the heading of "Quantity." (See Chap. VIII.)

TABLE OF ENGLISH VOWEL SOUNDS.

	Front	Mixed	Back
Close	iː i		uː* u*
Half-close	e		o*
Half-open	ɛ	ɜː ə	ʌ
Open	æ a		ɑ ɔ* ɔː*

* rounded.

CHAPTER VII.

DIPHTHONGS.

41. The term **diphthong** is applied to the emission of two vowel sounds in one and the same syllable[2] with

[1] In comparative phonetics it is advisable to use the symbols ɒ and ɒː to represent these English vowels, reserving ɔ for the "cardinal" ɔ which is half open. (See Appendix on Cardinal vowels.)

[2] For an explanation of Syllable see § 62.

one and the same breath impulse, giving to the untrained ear the impression of a single sound. So strong is this impression that we are apt to speak of the "long *a*" of the word *hay*, and the "long *o*" of the word *foe*. These so-called long vowels are in reality diphthongs: the "long *a*" is e̲ followed by a very short i̲, and the "long *o*" is o̲ followed by a short u̲. The truth of this statement may be illustrated by pronouncing rather slowly Eh! Eh! Eh! and Oh! Oh! Oh! If the speaker watches his lips he will notice that the utterance of these sounds is accompanied by a change in the form assumed by the lips.[1] In fact most of our so-called long vowels are not simple sounds, but diphthongs.

42. Diphthongs are of three kinds:—(1) **falling**, those in which the first element is predominant; (2) **level**, those in which the two elements are of equal importance; and (3) **rising**, those in which the second element is the predominant partner. In English, falling diphthongs are the rule, as is the case in the word *hear* hi̲ə̆[2], but many people pronounce this word in certain circumstances as a rising diphthong hĭə̲. We may even hear the level variety in this and similar words. In transcribing English phonetically, we assume it as a fact that our diphthongs are falling, and, in order to avoid

[1] It may be taken as axiomatic that any change of organic position produces a corresponding modification of sound.

[2] The symbol ˘ is used, when necessary, to denote the weaker partner in the diphthong. The predominance of one of the elements depends not only on length but also on "stress." (See § 64.)

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the use of diacritical marks, we merely write the two ordinary vowel symbols, thus hiə.

43. Below is a list of diphthongs usually heard among educated Southern English speakers. (The second symbol indicates the sound to which the second element tends, not necessarily that which it attains.)

ENGLISH DIPHTHONGS.

Phonetic Symbols.	Key Word.	Phonetic Spelling.
ei	d*ay*	dei
ai	*ai*sle	ail
ɔi	j*oy*	dʒɔi
au	b*ough*	bau [1]
ou	l*ow*	lou
iə	h*ear*	hiə
ɛə	p*ear*	pɛə
ɔə	f*our*	fɔə [2]
uə	p*oor*	puə [3]

44. To this list may be added two other diphthongs, ij and uw, often heard in Southern English speech in place of the true long iː and uː respectively. Thus sij and truw are not infrequent instead of siː and truː. The student should carefully note any variations from the diphthongs already given, both in dialects and in the pronunciation of individual speakers.

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[1] In dialects the word *naught* naut is a better example than the one given.

Many Southern English speakers do not use this diphthong, but substitute for it the pure vowel ɔː, thus making *four* fɔː rhyme with *paw* pɔː.

[3] A great many people pronounce oə or ɔə or ɔː instead of the diphthong uə in such words as *poor* puə, *sure* ʃuə, giving these words the values poə, pɔə, pɔː and ʃoə, ʃɔə and ʃɔː.

CHAPTER VIII.

LENGTH OR QUANTITY, AND CHARACTER OR QUALITY.

45. The length of time occupied in uttering speech sounds varies considerably, ranging from ·05 of a second for a ·final d to about ·43 of a second for a.[1] We speak of the period of utterance as **length** or **quantity.**

46. In an introductory book of this nature it is not necessary to deal in hundredths of a second, but we must recognise that there are different degrees in the length of the sounds we utter. For our purposes it suffices to distinguish two main degrees of length. The vowel of *put* put is **short**; that of *boot* bu:t is **long.** By these terms short and long it is not meant that any particular sound is short or long in comparison with any other particular sound, but that the same sound can have these two degrees of length. Short sounds are not marked by any special sign, but to indicate that a sound is long the symbol : is used. Intermediate degrees of length are usually left unmarked, and in the transcription of our own, amongst several other, languages we adopt the convention that a sound, normally long in stressed syllables, becomes **medium** in length when the syllable is unstressed.[2] Consonants as well as vowels may be of

[1] See Meyer's "Englische Lautdauer."

[2] For explanation of the terms stressed and unstressed see § 64. In *attitudinize* u is long; in *attitude* it is medium. This medium length may be denoted by ' after the vowel symbol. I have used this sign in "English Humour in Phonetic Transcript"

various quantity, but in our own language these differences are of little importance, and do not influence the meaning of the words in which they occur. There are, however, languages in which consonant quantity is of great importance, and cases do occur in English where consonants are prolonged.[1]

47. In English the character of certain vowels varies with their quantity. Thus the vowels of the words *sit* sit and *seat* si:t differ not only in their duration, but also in their effect upon the ear as regards their character or **quality**. If we ask a Frenchman, who has not been phonetically trained, to utter these two words, we shall notice that though his two vowels are not of the same length they are identical in quality. His pronunciation of *seat* is very nearly that of an Englishman, but that of *sit* strikes us as being peculiar. This is due to the fact that he pronounces both vowels with the tongue in the same position and form. We English, however, slightly alter the position of the tongue when we wish to differentiate between the long and the short variety of the two vowels. The position of part of the articulating portion of the tongue is lowered and somewhat retracted for the short vowel, and a smaller portion of its surface is in contact with the roof of the mouth. Thus, in the case of our short vowel, the air passage is wider than it is for the long

(Heffer, Cambridge) to indicate that the vowel which it accompanies may be long or short with corresponding degrees of tenseness (See § 48). ˌ might be used if it is necessary to show that a vowel is unchanged in character by becoming medium in quantity.

[1] See § 75 dealing with double consonants.

vowel. Hence some phoneticians name these twin varieties **narrow** and **wide.** Others consider that in the articulation there is a difference in the tension of the muscles of the tongue, and hence they speak of **tense** and **lax** vowels. In this book such vowels will be called for convenience tense or lax, without prejudice to other terms, which may be suggested and adopted as the science of Phonetics advances. The difference between tense and lax articulation may be illustrated by a cross section of the roof of the mouth and the tongue.

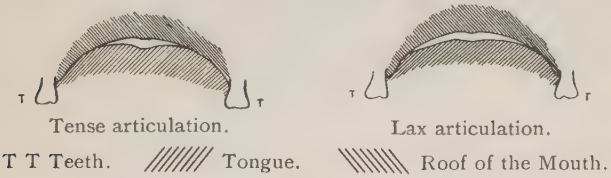

Fig. 6.

In each case the highest articulating part of the tongue is practically at the same elevation, and the difference in the quality of the resulting sounds is due to the form the tongue assumes in uttering the vowels.

48. In English we have several pairs of vowels, the one of which has a tense and the other a lax articulation, and the question of tenseness or laxness is closely associated with the quantity of the vowels in question. The long u: and i: have a tense articulation: the short u and i are of the lax type. Similarly the long ə: of *bird* bə:d is more tense than that of the short ə of *mother* mʌðə, and the long ɔ: of *all* ɔ:l than the short ɔ of *hot* hɔt.

49. Since in English the long vowels (with the exception of ɑ:) are tense, it is not usual to mark

tenseness or laxness by means of any diacritic other than the sign of length. When, as is the case in some languages, it is necessary to distinguish between the tense and lax varieties of the same vowel we use the acute accent ˈ to mark the tense, and the grave accent ˌ to indicate the lax vowels. We can thus differentiate between the Frenchman's and our own pronunciation of *sit* as follows:—sít, sìt.

CHAPTER IX.

ASSIMILATION, DISSIMILATION, ASSIBILATION.

50. Sounds which are adjacent to one another have a tendency, more or less perceptible, to react one upon the other, so that one of them borrows some characteristic or characteristics from its neighbour. For instance, n, which is a dental nasal, may become, when followed by a labial consonant, a labial nasal; thus we may over and over again hear from the pulpit or the reading desk *Saint Paul* pronounced səmpɔ:l instead of sən(t)pɔ:l[1]. Similarly the ŋ of the word *strength* streŋθ frequently changes from the velar ŋ to the dental n, owing to the neighbourhood of the dental θ.[2] Such borrowing of characteristics of neighbouring sounds is called **assimilation.**

[1] Also pronounced sin(t)pɔ:l and sn̩(t)pɔ:l. Bracketed symbols indicate optional omission of the sound.

[2] This pronunciation strenθ is common in Scotland.

51. Assimilation may be divided into two main classes, **established** and **accidental**. By established assimilation must be understood that which has become so usual in our speech that its omission would amount to mispronunciation: by accidental is meant assimilation which is merely an individual speaker's economy of effort. Examples of established assimilation are to be found in the words *congregation* kɔŋgrigeiʃn and *observe* əbzə:v. In the former instance n becomes ŋ through the influence of the succeeding g, and in the latter the s is voiced owing to the preceding voiced b. An instance of accidental assimilation is to be found in the careless pronunciation of the word *ribbon* ribn as ribm, where the dental nasal n becomes a labial nasal m through the influence of the labial b. The Sanscrit grammarians reduce consonant assimilation to a system under the name of *Sandhi* (conjunction) by the rules of which consonants coming in contact with certain others undergo definite changes.

52. Assimilations of both classes mentioned in the preceding paragraph may be put into various subclasses on various principles. And, as assimilation plays an important role in practically all languages, every student of linguistics[1] should be able to

[1] Students of linguistics ought, from the very nature of the study, to be also students of phonetics. Correct pronunciation is no less important than correct grammatical expression. Besides, no efficient study of the history of a language can be undertaken without a knowledge of the laws of sound change. Through lack of such knowledge ridiculous mistakes have been made by would-be philologists. Thus Ménage insisted that *Alfana*, the name given by Ariosto to Gradasso's horse, was derived from the Latin *equus*. This derivation was ridiculed by the Chevalier d' Aceilly

appreciate, reproduce, and classify every type of the phenomenon.[1]

53. The first questions the phonetician should ask himself are (i) Does the preceding affect the succeeding sound (or sounds)? (ii) Does the succeeding sound (or sounds) affect the preceding? and (iii) Do the sounds affect one another? If the first sound carries its influence forward the assimilation is said to be **progressive**; if the succeeding sound affects the preceding, it is an example of **regressive** assimilation, and if the adjacent sounds act upon each other more or less equally the influence may be called **reciprocal**, or **double**. In all three types may be found examples of **complete** or of **partial** assimilation.[2] Languages differ in their preference for one or other type, though, generally speaking, each may be found in any given language. English, together with other Germanic languages, seems to like the progressive variety, as instanced by the words *leads* li:dz,[3] *foxes* fɔksiz, *water* wɔ:tə (originally watər), *bacon* not uncommonly pronounced

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as follows:—

Alfana vient d' *equus* sans doute,
Mais il faut convenir aussi
Qu' à venir de là jusqu' ici,
Il a bien changé sur la route.

[1] In the case of a language to be reduced to writing for the first time, the phonetic alphabet provides the means of symbolising established assimilation. Accidental assimilation may, except for scientific purposes, be neglected. (See Ch. XXII.)

[2] Complete assimilation is exemplified in Italian *atto* atto for the original aktο. Partial assimilation is found especially in diphthongs.

[3] Compare with *heats* hi:ts.

beikŋ instead of beik(ə)n.[1] German examples of progressive assimilation are found in *haben* ha:bm, *denken* dɛŋkŋ, *hast du* hast tu.[2] Assimilation in French and other Romance languages is generally regressive. Instances in French are *anecdote* anɛgdɔt, *tasse de thé* tɑz də te, *observe* ɔpsɛrv.[3] Italian gives *un viaggiatore* uŋ[4] viaddʒato:re, Spanish *un momento* um momento and Portuguese *vento* vẽntu. Reciprocal assimilation is common in diphthongs, and may occur also between consonants. In the English diphthong *ei* of the word *fate* feit, the normal e, as heard in *get*, is somewhat raised and becomes slightly tense, whilst on the other hand the i is somewhat lower than that heard in *pit*.[5] In German, the diphthongs orthographically written *eu* and *äu*, doubtless originally pronounced eu and ɛu respectively, have both become ɔy, the e and ɛ having, by regressive

[1] Examples of regressive assimilation are not common in standard English, but they occur occasionally, even in the mouths of educated speakers. For instance, *give me* gimmi(:), *by and by* bai(ə)mbai, *glory* dlɔ:ri, *horseshoe* hɔ:ʃʃu:, *how do you do* haudʒədu:. The last example is rather a case of assibilation through assimilation. (See § 59 sq.) In most of these examples the assimilation is partial only, and sometimes it is not truly regressive but reciprocal.

[2] Progressive assimilation is sometimes found in French, as exemplified by *pied* pçe for pje. This type can be practically reduced to rule of thumb. (See "Sons du français," Passy.)

[3] Compare with English *observe* əbzə:v, in which the assimilation is progressive.

[4] This is not a bilabial m but a labio dental (which in default of a special type might be represented by m^v), represented by ŋ.

[5] This is true in my own case, as well as in that of many educated people of my acquaintance. The London tendency with this diphthong is to lower the position of the tongue for both e and i, with the result that fæɛt fæet and faet may be heard.

assimilation, pulled the tongue position of u forward, whilst as compensation, the anticipated back vowel has, owing to progressive assimilation, both retracted the tongue position of e and ɛ and at the same time preserved some measure of lip rounding.

54. There is yet another point of view from which assimilation may be looked at for the purposes of classification, namely, the acoustic effect due to modification of articulation. This has already been suggested above, in the examples given of reciprocal assimilation. It may have been noticed, as in the case of *leads*, *anecdote*, that an originally unvoiced sound becomes voiced. We speak of such assimilation as being **from breath to voice.** Where a normally voiced sound changes to unvoiced as the result of assimilation, it may be described as **from voice to breath,** an example of which is found in the French *observe* and the German *hast du*.[1] Sometimes a pair of sounds having one marked common articulation are assimilated. Thus the n of *un* in Italian and Spanish becomes ɪŋ before *viaggiatore* and m before *momento*, the common feature being nasalisation of the consonants n and m. Similarly we find in English that the normal s of *horse* changes to ʃ in the compound *horse-shoe*, "the common factor" being dental fricative quality. No really satisfactory name for such assimilation has been found, but for want of a better **position changed** or **shifted** may be suggested.

[1] This is comparatively rare in English, and even when it does occur the assimilation is usually partial only. Examples are *puma* pju:mɑ, which becomes pj̥ju:mə or pçu:mə (for ç see § 97), *quite* kwait, heard as kʷwait or kʷait.

55. Portuguese *vento* is an example of a normally oral vowel e becoming nasal owing to the proximity of the nasal consonant n, which tends to maintain the lowered position of the soft palate. On the other hand a normally nasalised sound may become purely oral owing to the neighbourhood of an oral fellow. A good specimen of this is given by Professor Passy in the word *monsieur* məsjø or məsjø. In rapid speech the vowel of the first syllable is elided, and consequently m is subjected to the influence of s. Owing to economy of effort[1] the velum fails to lower itself and the vocal chords are not set in motion. Consequently the voice labial nasal m is replaced by an unvoiced oral p, and the word is pronounced psjø.[2] Assimilations of this class can be termed **oral to nasal** and **nasal to oral** respectively.

56. It is impossible to deal here anything like adequately with the question of assimilation. The field for investigation is vast, and the laws of the phenomenon are still imperfectly codified, but a great deal of extremely useful data has been put together by such authors as P. Passy, Jespersen, Viëtor, D. Jones, and others. Most of the works mentioned in the bibliography contain valuable information on the subject. The student of a new language should make

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[1] Economy of effort is sometimes called laziness, but the two terms are by no means synonymous. Economy of effort attains the result aimed at by the shortest means. Laziness produces either a mediocre result or none at all.

[2] This is an example of what might be called **redoubled** assimilation. Another is found in the pronunciation of the French word *second*, which in certain positions (from a phonetic point of view) is səgɔ̃, in others zgɔ̃.

endeavours to find out whether assimilation exists in the language under study (as it most probably does), and if it does exist, to what classes and sub-classes it belongs.

57. Many of the terms used in classifying the various types and sub-types of assimilation are somewhat uncouth, and decidedly cumbersome. I venture to suggest to those interested in the subject the following as specimens of a terminology, which may be considerably amplified.

TERMINOLOGY.	EXAMPLE.
Established	*congregation* kɔŋgrigeiʃn
Accidental	*how do you do* haudʒədu:
[These may, if needful, be prefixed to the following]	
Progressive voiced	*leads* li:dz
Progressive breathed	*hast du* hɑst tu
	seest thou (in English dialect) si:stə
Progressive nasalised	*no* nõũ [1]
Progressive shifted	*haben* hɑ:bm
Regressive voiced	*tasse de thé* tɑz də te
Regressive breathed	*observe* ɔpsɛrv
Regressive nasalised	*vento* vẽntu
Regressive shifted	*glory* dlɔ:ri

[1] So far as I know this assimilation is always accidental, and not infrequently individual, among standard speakers of English. It is not uncommon in Cockney and North American English.

Shifted sounds may be still further more or less definitely indicated by adding to the terminology already suggested labial, dental, palatal, etc., to show in what direction the shifting takes place.

58. A phonetic phenomenon which is the opposite of assimilation is **dissimilation,** in the case of which like sounds for some reason or other become unlike in some characteristic or other. An example of dissimilation is found in the French word *pèlerin*, English *pilgrim*, both of which are derived from the Latin *peregrinum*. The repetition of r was found difficult or objectionable, and hence the lateral l was substituted for one of them. Similarly *paravredum* has become *palfrey*. In Greek we find *πιστός* for *πιθτος* ($\theta = t^h$). Dissimilation is not of great interest to those who are studying language for the purposes of speaking, but all students of etymology should know of its existence. Dissimilation acts as a bar to further change, whereas there is little limit to the changes produced by assimilation.

59. The combinations of the dental plosives t and d with the corresponding fricatives s, ʃ, z and ʒ give rise to a good deal of controversy amongst phoneticians. In some cases the combination is so intimate that it is appreciated as a single effort; in others it is felt to be the meeting of two individually articulated consonants. The words *churches* tʃəːtʃiz and *judges* dʒʌdʒiz may be used as examples of the different degrees of combination. The first tʃ and dʒ give a very marked impression of being but one sound. The second appeal to the ear move as two separately articulated consonants. This individuality of the elements can be yet more clearly heard in *that*

shop ðæt ʃɔp.[1] If it be necessary in any particular language, which is rarely the case, to differentiate the very intimate from the loose combination, a bind ‿ may be used for the former, e.g. t͡ʃət͡ʃiz, d͡ʒʌd͡ʒiz.[2] The latter may be indicated by a hyphen, thus nʌt-ʃel.

60. In the examples given above modern spelling has to a limited extent kept pace with development of pronunciation. The original Greek *κυριακή* kyriakɛ: appears in Anglo-Saxon as *circe* perhaps cirċe[3], and has eventually become tʃə:tʃ, as we now pronounce it. Similarly the Latin *judicem* produced *juge* ʒy:ʒ in French and now is heard in English as d͡ʒʌd͡ʒ. This change from non-sibilant to sibilant character is known as **assibilation**, which is really a type of assimilation carried to a considerable degree.

61. Orthography has not invariably, even to a limited extent, kept pace with change of pronunciation, and we find the same combination of letters sometimes assibilated and sometimes with fairly normal pronunciation. In the word *tune*[4] *tu* is pronounced tju:, but in *fortune* it is tʃ(ə). Some knowledge of the phenomenon of assibilation will probably be useful to those who study cognate languages. As a good example of the

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[1] No example of final d preceding initial ʒ is to be found in English : an example in French is *grande joie* grɑ̃:d ʒwa.

[2] Two very interesting articles by Dr. A. Frinta on this question are to be found in "Le Maître Phonétique," 1908, p. 74, and 1909, p. 54.

[3] For ċ see § 119. The reconstructed pronunciations given in this and the following paragraph are conjectural only, though probable.

[4] *Tune* is often vulgarly pronounced t͡ʃu:n or t͡ʃju:n.

way in which assibilation works, the word *action* may be cited. The original Latin *actionem* aktiõnẽm must have passed through some such pronunciations as aktjõn, aktɕjõ(n), aktsjõ(n) till it arrived at aksjõ in modern French and ækʃ(ə)n in English.

CHAPTER X.

SYLLABLES, SYLLABIC SOUNDS, STRESS, BREATH-GROUPS.

62. When we say such a word as *impetuosity* impetjuɔsiti, we feel that it seems to divide itself up into sections, each of which is felt to be a unit in itself. Each of these units is called a **syllable.**[1] The impression of syllabic division is due mainly to the fact that certain sonorous sounds are separated from one another by sounds which are intrinsically less sonorous[2], or which are rendered less sonorous by a more or less abrupt diminution of the breath effort. Thus in the word *impetuosity* impetjuɔsiti, the vowels i and e are separated by the less sonorous consonant sounds m

[1] The question as to what a syllable *is* has not yet been satisfactorily settled. No definition hitherto evolved has sufficed to meet all cases. Those who are interested in the question should read "Lehrbuch der Phonetik," O. Jespersen, § 191 sq. and "Petite phonétique comparée," P. Passy, § 110 sq.

[2] Vowels are more sonorous than consonants (and open vowels are more so than close ones). Even a vowel may serve to act as the "frontier line" between two syllables. See "Pronunciation of English," D. Jones, § 204.

and p; the vowels u and o are separated by a diminution of the breath force and so on. Hence in the word *impetuosity* we have six of these sonorous vowel sounds separated from one another, either by consonants naturally less sonorous or by a diminution of breath force. Therefore we have six syllables.

63. **Syllabic** sounds are generally vowels, but this is not always the case. The consonants m, n, ŋ and l being particularly sonorous as compared with most other consonants, and being closely allied to vowels in the degree of openness of the passages in which they are formed, can act as syllabic sounds. This is the case in such words as *prism* prizm, *vision*, viʒn, *bacon* beikŋ (the n in careless pronunciation becoming ŋ; see § 53) and *people* pi:pl.[1] When it is necessary to mark the syllabic character of a consonant, it may be done by means of a small perpendicular stroke ˌ placed over or under it. Thus the trissyllabic nature of *parsonage* can be distinguished from the dissyllabic of *parsnip* by the notations pa:snidʒ, pa:snip.[2]

64. We do not utter each syllable of a word or each word of a sentence with the same force or emphasis,

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1 Those whose native tongue has no syllabic consonants think that they hear ə or ʌ before the syllabic consonant. Thus a Frenchman imagines that we say prizəm, viʒən. Arabic words which are monosyllabic in the mouths of native speakers become dissyllabic when borrowed into Urdu. Thus *izm*, *hazm* and *fazl* are pronounced in Urdu izəm or izʌm, hɑzəm or hɑzʌm and fɑzəl or fɑzʌl.

2 There are languages in which whole sentences may be made in which there is not a single vowel sound. For instance Passy in his "Petite phonétique comparée" cites in Czech *strtʃ prst skrz krk*, which means "Pass the finger across the neck." In these words the r seems to be the syllabic sound.

but we exert our organs of speech so as to make some syllable or syllables stand out beyond the others. In the word *civilisation* sivilaizeiʃn[1] the strongest syllable is zei and the next strongest si. This force used to emphasise certain syllables is called in the language of phonetics **stress.** There are many degrees of stress, but for practical purposes it is sufficient to recognise three at most, which we may call **primary, secondary** and **weak.** Weakly stressed syllables may be termed **unstressed.** Primary, the most marked stress, is indicated by ˈ placed in front of the syllable to which it applies, and secondary is indicated by ˌ. Unstressed syllables are left unindicated. The word *civilisation* with the stress marks would be phonetically transcribed ˌsivilaiˈzeiʃn (or ˌsiviliˈzeiʃn).

65. In some languages the stress is definitely fixed on a certain syllable of a word. But in English we do not always stress the same syllable. Considerations of contrast or emphasis frequently cause us to transfer the stress from the normal to some other position. The words *competent* ˈkɔmpitənt and *incompetent* inˈkɔmpitənt have, when not contrasted with each other, the stress usually on the same syllable kɔm, but when we contrast the affirmative with the negative form we **shift** the stress in the latter from kɔm to the privative prefix in- and say ˈinkɔmpitənt. Several prefixes such as dis- (amongst others) may take the stress when the negative and the affirmative forms are contrasted. Stress, when transferred from a normally

[1] Pronounced by some sivilizeiʃn.

to a not normally stressed syllable, is called **shifted.** A very common example of shifted stress is heard in the pronunciation of the word *absolutely* ˊæbsəl(j)uˌ(ː)tli, which becomes æbsəˊl(j)uːtli.

66. The addition of a termination may also cause the stress to be shifted to some syllable not stressed in the simplest form of the word. Such terminations, amongst others, are *-al* -(ə)l, *-tion* -ʃ(ə)n, *-ality* -æliti, as instanced in the pronunciation of the words *regiment* ˊredʒimənt, *regimental* redʒiˊment(ə)l, *decimalise* ˊdesiməlaiz, *decimilisation* desiməlaiˊzeiʃ(ə)n, *formal* ˊfɔːm(ə)l, *formality* fə(ː)ˊmæliti. It is a good exercise for the student of phonetics to make a list of the terminations which give rise to a shifting of stress.

67. In addition to the stress which may be put upon any particular syllable or syllables of a word there is stress which may be put on any word of a sentence in order to draw particular attention to that word. The question "What have you done with that book?" may be stressed in six different ways :—(1) ˊhwɔtəvjudʌnwiððætbuk? (2) hwɔtˊhævjudʌnwiððætbuk? (3) hwɔtəvˊjuːdʌnwiððætbuk? (4) hwɔtəvjuˊdʌnwiððætbuk? (5) hwɔtəvjudʌnwiðˊðætbuk? (6) hwɔtəvjudʌnwiððætˊbuk?[1] Here each shifting of the stress modifies the meaning of the question in a way that will be self-evident to the reader who pronounces it aloud.[1] The kind of stress which is put on some particular word or words in a sentence is known as **sentence-stress.**

[1] In these examples marked the sentence-stress only has been marked. In several of the cases the word *book* bears a considerable stress, but for the sake of simplicity in the transcription this is left unmarked.

It is produced by making an extra breath effort on the stressed syllable of the word we particularly wish to emphasise. Sentence-stress, apart from **word-stress,** is not usually indicated in a phonetic transcript.

68. Rhythmic feeling may sometimes cause the shifting of stress in a sentence from the normally stressed syllable to some other, for we have a tendency to avoid two consecutively stressed syllables. If we compare the two sentences "he is very well-to-do" and "he is quite well-to-do," we shall find that owing to a sense of rhythm the compound word *well-to-do* would be differently stressed in the two cases by most speakers; thus: hi:z´veri´wel-tə´du:, hi:z´kwaitwel-tə´du:.[1]

69. For convenience in reading and for lexicographical purposes we are accustomed in writing and printing to split up our sentences into words, but in connected speech words are not thus separated. We are in the habit of uttering a series of words connected in sense with one emission of the breath and with no break between them, making a pause only when we have expressed a complete idea. We should not split the sentence *I saw you in the city this afternoon* into separate words, but should pronounce them as if written phonetically aisɔ:ju(:)inðəsitiðisɑ:ftənu:n. We might add to the above sentence *but you didn't see me*, and still in fairly rapid speech make no break, thus:

aisɔ:ju(:)inðəsitiðisɑ:ftənu:nbətju(:)didn(t)si:mi:. Such groupings of words in one emission of breath are known

[1] Notice if you make any stress difference in *Princess Pat* and *Princess Patricia* in the word *Princess*. Many speakers do not shift the stress in these circumstances, and in consequence their speech is often of a "sledge-hammer" type.

as **breath-groups.** Students should accustom themselves to reading and writing in breath-groups. They will find it very helpful when they want to study the intonation of any language they are learning. (See §§ 78 and 79.) And indeed the beginning of language acquisition is best made by learning words in groups. Probably no one has yet learned a language from lexicography alone.

CHAPTER XI.

GLIDES, THEORY OF PLOSIVE CONSONANTS, DOUBLE CONSONANTS.

70. When we pass from one speech-sound to another the transition is not always instantaneous, though it may be so rapid that the human ear cannot detect anything between them. During the utterance of a word or of a breath-group there is no cessation of the flow of air, and, therefore, as the organs of speech pass from one position to another there is a series of intermediate sounds. In pronouncing the diphthong au, for instance, the tongue positions for the sounds seized by the ear are shown in the following diagram by the lines marked *a* and *u*.

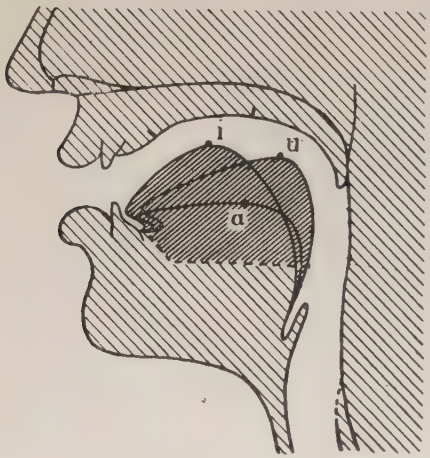


Fig. 7.[1]

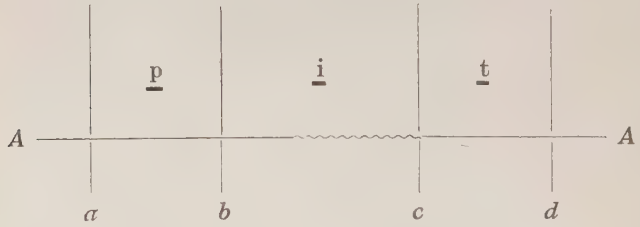
As the tongue rises from the a to the u position it must obviously pass through positions which, if maintained, would produce some varieties of ɔ and o.[2] But owing to the rapidity with which the change is effected the intermediate sounds are inappreciable to the ear. These intermediate sounds, whether audible or not, are called **glides.**

71. Audible glides exist in English, but, unless we have had some phonetic training, we do not always realise their existence. In the pronunciation of the word *pit* by the average Englishman there is an interval between the release of the consonant p and the setting

[1] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

[2] If the diphthong au is pronounced with a very gradual change of the tongue position the intermediate vowels may be distinctly heard.

in vibration of the vocal chords for the vowel i. During this interval a slight puff of breath escapes through the lips, giving rise to what is known as **aspiration.** This is nothing more nor less than an unvoiced glide. The diagram given below gives some idea of what takes place as we say the word *pit*.



a. Obstruction for p. *b*. Release for p.
ab. Stop of p.
c. Obstruction for t. *d*. Release for t.
cd. Stop of t.
AA. Line showing by the "wave" the period during which the vocal chords are vibrating.

Fig. 8.[1]

It will be seen that at the point where the release of the p takes place the vocal chords are still quiescent and that they are not set in vibration till an appreciable time after the release. This glide might, when needful to note in writing, be indicated by a very small h placed as an exponent after the consonant symbol. There is also a similar unvoiced glide after the release for t. We might, then, write the word *pit* $p^{h}it^{h}$.[2] It is not

[1] This diagram is a simplification of results obtained instrumentally.

[2] The aspiration, which we represent by the letter h, has many values. That which comes between the p and the i of

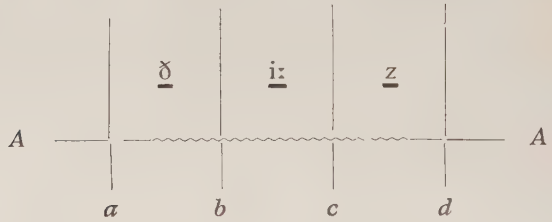
necessary in the transcription of a language which has the aspirated variety only to record the existence of the aspiration.[1]

72. In the previous paragraph the word glide has been used for the aspiration following the release of the consonant t as the final sound of a word. Strictly, the term glide should be used to express nothing more than a necessary intermediate sound between two regular speech-sounds. In order to simplify terminology, however, the term may apply not only to a necessary intermediate sound, whether perceptible or not to the ordinary ear, but also to any sound leading up to or following any speech-sound represented by the ordinary spelling. The normal pronunciation of such a word as *these* ðiːz affords a good example of these so-called glides. The initial and final consonants are nominally voiced, but in the average English pronunciation they are not really so during the entire period of their production. In the case of ð the vocal chords do not begin to vibrate till an appreciable time after the obstruction has taken place: on the other hand the voice ceases before the release for z takes place. Thus the word

pit is often neither more nor less than a breathed (not whispered) i. After a consonant the aspiration may be a variety of ʃ or s. In some languages, popular Danish for instance, it is assimilated to the corresponding unvoiced fricative consonant. The popular Copenhagen resort *Tivoli* tʰivɔli is frequently pronounced tsivɔli. A very convenient symbol ‘ has been suggested for this aspiration. If used, the word *pit* would be transcribed p‘it‘.

[1] Some languages possess both aspirated and unaspirated consonants, and it is essential to take note of these as they are frequently significant. (See §§ 83, 84, 85.)

these is really pronounced with a kind of initial θ merging into ð and a final z dissolving into some variety of s. Figure 9, again a simplified graph of instrumental demonstration, illustrates roughly what takes place in the ordinary pronunciation of the word *these.*



a. Obstruction for ð. *b*. Release for ð.
ab. Stop for ð.
bc. Stop for iː.
c. Obstruction for z.
cd. Stop for z.
d. Release for z.
AA. Line showing by " wave " the period during which the vocal chords are vibrating.

Fig. 9.

The same phenomenon may be noticed in the case of all our initial and final voiced consonants, viz. that initially the voiced consonants are unvoiced at their inception, and that finally they are unvoiced at their termination. We might consider that such consonants are divided into two parts, which for want of a better term we might call the **approach** and the **departure.** Some phoneticians call them **on-** and **off-glides.** Thus one might describe the English voiced consonants as having an unvoiced approach when initial, and an unvoiced departure when final. A better description of

ð in the word *these* would be **initially unvocalised** and the z would then be called **finally devocalised**. It may here be set forth as a law, that all our so-called voiced consonants are by most speakers initially unvocalised at the beginning of a breath-group, and finally devocalised when they come at the end of a breath-group. Medial voiced consonants are usually fully vocalised, but there are many individuals who habitually devocalise a voiced consonant between two voiced sounds, and even carry on the devocalisation to a following voiced sound. Such people would pronounce the word *body* pbɔdtii.

73. The glides spoken of in § 72 are unaccompanied by the vibration of the vocal chords, and are hence known as unvoiced glides. There are however voiced glides, which, though not common in conversational style in English, may yet be heard in declamation and from the pulpit. We have all probably heard the preacher who gave us the impression of introducing every voiced consonant with ə and of finishing all voiced consonants with the same sound. Such a person's pronunciation of the word *these* would give a simplified graph like the following:—

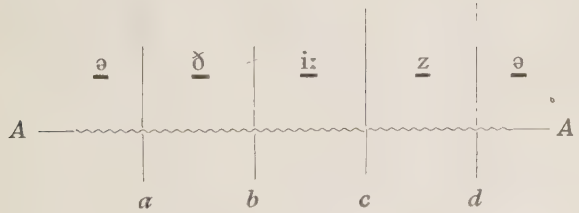
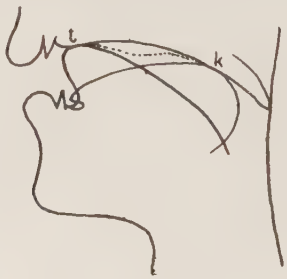


Fig. 10.

If it be wished to indicate these glides in a phonetic

transcript one might write ᵊðiːzᵊ, making use of a diacritical ᵊ to indicate that the formation of the consonant is initially preceded by and finally followed by voice.[1]

74. Closely allied to the question of glides is the Theory of Plosive Consonants. It has been remarked in § 17 that a consonant may be considered to consist of three parts—obstruction, stop, and release. Now, when two plosives are contiguous, each of them, in normal English pronunciation, lacks one of its parts. If we utter the name *Dick* the final consonant k is complete, having obstruction, stop, and release. Similarly the initial t of *Turpin* has all its three parts. But if we say *Dick Turpin* we shall find that the k has no audible release, and that no obstruction for the t is perceptible except to the very highly trained ear, for the t position is assumed before the back of the tongue quits the k position. See the figure below.



t. Tongue position for t.
k. Tongue position for k.

Fig. 11.

[1] The voiced medial glide is rare in English, but I can recall a case where a clergyman, who, until I pointed out his peculiarity, always inserted a voiced glide between any plosive consonant and a following r sound. Thus he always said gəreis for greis

There is a period of time when the tongue assumes the position indicated by the dotted line, making at the same time the stop for both consonants. Similar phenomena take place in other consonant combinations. The student should note and analyse what takes place in his own and other people's pronunciation of such pairs of consonants as gd in *begged* begd, pk in *topcoat* tɔpkout, pt in *apt* apt, and tp in *hatpin* hætpin. Other combinations for experiment will doubtless suggest themselves.[1] Such consonant combinations come under the category of Sandhi consonants. See § 51.

75. Double consonants (so-called) are rare in English in the body of a word, though they may be sometimes heard in such a word as *unknown* ʌnnoun and other words beginning with a privative prefix, such as *in-* or *dis-*. They may also be heard in compound words, the first element of which ends with the same consonant position as that with which the second element begins, for example *coat-tail* koutteil, *cup-bearer* kʌpbɛərə. We also find double consonants in sentences in which the last sound of one word is identical (the question of voice or its absence being neglected) with the initial

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grace. For further information about glides see "The Pronunciation of English," D. Jones; and "Lehrbuch der Phonetik," O. Jespersen.

[1] The theory of plosive consonants is very important, some languages differing entirely from English and requiring each consonant to be completely enunciated with a glide, voiced between voiced consonants and unvoiced between unvoiced consonants. We English say ækt ə *actor* with no audible glide between k and t: in French we hear ak^{h}tœ:r *acteur*. A voiced glide may be heard in the French anɛg^{ə}dɔt *anecdote*. See "Pronunciation of English," §§ 234 to 238. See also "Petite phonétique comparée," pp. 115 to 118.

sound of the following word. The following somewhat ridiculous sentence is an example of the latter case: *Bob put ten nibs straight down* bɔbputtennibzstreitdaun. Here bp, tt, nn, zs and td are, so far as the positions of the articulating organs are concerned, pairs of consonants of which each member is of identical formation. But the first of each pair has no perceptible release and the second has no perceptible obstruction. The real difference between a double and a single consonant is that the latter has a longer stop than the former. If one of the pair is voiced, that part of the stop by which it is suggested to the ear is voiced, and the other part unvoiced.[1]

CHAPTER XII.

INTONATION.

76. We do not utter all the words of a sentence, nor all the syllables of a word, nor, indeed, all the sounds of

[1] The second of the pair is sometimes marked by a fresh breath impulse. In some languages, notably those of India, the correct pronunciation of double consonants is of the utmost importance. In Hindustani, for instance, *patā* pʌtɑ means *sign*, *pattā* pʌttɑ *leaf*. Italian, amongst European languages, has many pairs of words, the meanings of which are differentiated by the absence or presence of double consonants: e.g. *fato*, fɑto, *fate* and *fatto* fɑtto *done*, *affair*.

a syllable at the same musical level or pitch. The rise and fall of the musical pitch in connected speech is sometimes very considerable, being in ordinary speech somewhere between one and a half and two octaves. In declamatory style it may exceed the two octaves. This rise and fall in musical pitch is called, in the language of phonetics, **intonation.**

77. Nearly every language has its own individual peculiarities of intonation. These the student will have little difficulty in discovering if he has studied the intonation scheme of his own language. A good method of comparing intonations is to take a short passage of one's own language and to get a foreigner to translate it into his tongue as closely as is consistent with difference of idiom. It should then be read by each person as naturally as possible in his own language, and the differences of rise and fall in the voice-pitch should be noted. The two persons should then interchange, if possible, and each will easily perceive how the two intonations differ.[1]

78. Intonation is most conveniently marked by means of curves indicating the rise and fall of the voice from a musical point of view. Except for scientific study these curves need not represent accurately the real pitch of the voice: an approximation suffices. Below is an example of intonation curves applied to the following short dialogue.

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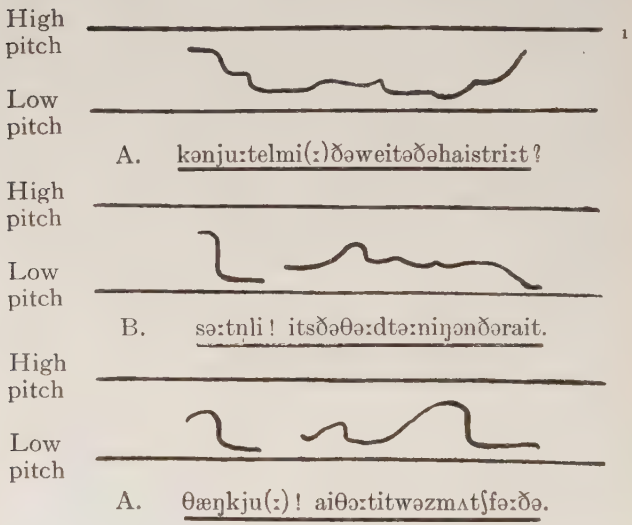
1 An excellent intonation specimen which would serve this purpose is to be found in C. Motte's "Lectures Phonétiques" (Didier, Paris).

A. *Can you tell me the way to the High street?*

B. *Certainly! It's the third turning on the right.*

A. *Thank you! I thought it was much further.*



79. Intonation in English, as in most European languages, very often serves to modify the meaning of a word or of a sentence. The simple negative *no* nou may express mere contradiction, emphatic contradiction, surprise, or the suggestion of an argument to follow, according to the tone with which it is uttered.

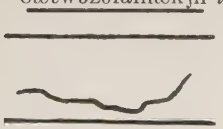
[1] The space between the lines of high and low pitch represents a little over an octave and a half.

1. nou=*of course not.* 2. nou=*certainly not.*

3. nou=*is it really so?* nou=*it may be so, but—*

Other shades of meaning could be indicated by other variations of tone, but the examples given above will suffice. Similarly a sentence may be made to alter its meaning according to the intonation with which it is spoken. Thus the words *That was a fine action* may be made to express either admiration or irony.

1. ðætwəzəfainæk∫n *i.e.* an action to be admired.



2. ðætwəzəfainæk∫n *i.e.* an action worthy of contempt.

The intonation of the English language follows certain more or less definite rules. A list of the principal of these will be found in "Outline of English Phonetics," by D. Jones, Ch. XXI.[1]

[1] In some languages individual words have fixed intonation, the meaning of which is entirely altered by a change of tone. (See Ch. XIX.)

CHAPTER XIII.

STRONG AND WEAK FORMS.

80. If a foreigner were to ask us how we pronounced the words *have*, *would*, *is*, *than* and *can*, we should probably tell him hæv, wud, iz, ðæn and kæn. These are indeed the dictionary pronunciations, but unless these words are emphasised we rarely pronounce them thus in ordinary talk. What we usually say is həv, əv or v; wəd, əd or d; z or s (as in *that's right*); ðən or ðn, and kən or kn. The first forms, hæv, wud, &c., are known as **strong**, and the second as **weak** forms. These latter are by far the more generally used in everyday speech. Amongst a fairly long list of words which have strong and weak forms are *were*, *am*, *must*, *does*, *not*, *of*, *could*, *may*, *from*, *them*. Below are a few sentences in which are given both the strong and the weak forms of certain words. It is probable that the reader will find that the pronunciation in which the strong forms are predominant seems rather affected.

1. *I can tell them that we have done all that is to be done.*

Strong forms: ai kæn tel ðem ðæt wi: hæv dʌn ɔ:l ðæt iz tu bi: dʌn.

Weak forms: ai k(ə)n[1] tel ð(ə)m ðət wi(:) (ə)v dʌn ɔ:l ðəts tə bi dʌn.[2]

2. *How do you do?*

Strong forms: hau du: ju: du:?

Weak forms: hau d jə du:?

---

[1] kŋ. [2] or ðət iz tə bi dʌn.

3. *How many of them shall I ask for?*
Strong forms: hau meni əv ðem ʃæl ai ɑːsk fɔː?
Weak forms: hau məni əv ð(ə)m ʃ(ə)l ai ɑːsk fə'?[1]
Students should seek for other words which have strong and weak forms and make sentences containing them with a transcription in phonetic symbols.[2] An example of a word which has one strong and several weak forms is the pronoun *them*, which is found as ðem, ðəm, ðm, əm and m.

81. A kind of weakening is sometimes found in the form of **elision**, that is the omission of some sound or sounds. The full and careful pronunciation of *general* would be dʒenərəl, but as a rule we say dʒenrəl, or even, in very rapid and negligent speech, dʒenrl[3]. Examples illustrating optional elision have already been given, the omissible sounds being represented by bracketed signs. Elision is not generally of great importance in English, but it is regular, and subject to well defined laws in many languages.[4]

---

[1] or hau meni . . . fə?

[2] Strong and weak forms are found in most languages. They should be noted as they occur. The use of strong forms in unemphatic positions is pedantic. There is such a thing as over-carefulness in pronunciation. Every Sunday my ears used to be shocked by the pronunciation of the "indefinite article" *a* as ei.

[3] The pronunciations of *castle* and *apostle* kɑːsl and əpɔsl are examples of established consonant elision. The careless pousl for poust(ə)l *postal* is an instance of accidental elision.

[4] Elision of ə is regular and orthographically recognised in French when this sound would precede a vowel, e.g. *l'abbé* l abe. It is frequently elided between consonants in certain circumstances. *Je te le demande* would not be pronounced ʒə tə lə dəmɑ̃ːd, but ʒ(ə)tlədmɑ̃ːd or perhaps ʒtəldəmɑ̃ːd. (See "Sons du français," § 240 sq.)

CHAPTER XIV.

ASPIRATED AND FULLY-VOICED CONSONANTS.

82. Many of the sounds which occur in our own language are to be heard in foreign languages with some more or less marked variations. It is necessary for any one who wishes to speak a foreign language well to be able to appreciate and to reproduce these variations at will, for, as has been said before, these shades of sound sometimes completely alter the meaning of a word. Let us now see in what form some of these variations consist. The first point to which we shall turn our attention is that of aspiration.

83. It has already been seen in § 71 that an English unvoiced plosive is followed by a slight aspiration not only when it is the final sound of a breath-group, but also before any vowel. That is to say, there is an unvoiced or breathed glide between the consonant and the vowel.[1] In French, amongst other languages, there is no unvoiced glide between an unvoiced plosive and the following vowel, the release for the consonant being simultaneous with the setting in vibration of the vocal chords—e.g. compare Fig. 9 with Fig. 12. Now though the presence or absence of aspiration in French or English may be nothing more than a source of unpleasant mispronunciation which in no way alters the meaning of a word, this is not the case in all languages.

[1] This unvoiced glide occurs in the pronunciation of some individuals even after voiced consonants. It is by no means uncommon in the pronunciation of many Irish people, who say, for instance, b^{h}ɔi for bɔi, d^{h}ɔg for dɔg. The necessity for the control of this aspiration has been illustrated in Chapter I.

The correct pronunciation, therefore, of aspirated and unaspirated consonants is of the utmost importance. However difficult it may be for an English (or for any) student to differentiate, both as regards production and appreciation, between aspirated and unaspirated consonants, it is absolutely essential that he should learn to do so, particularly when he has to deal with Chinese, Indian or African languages. Thus, in Hindustani, *pal* pʌl without aspiration means a 'moment,' but *phal* pʰʌl, with aspiration means 'fruit.'

84. English people, especially those of the south, find little difficulty with the aspirated variety of unvoiced plosive consonants, but the acquisition of the unaspirated kind requires considerable practice. Scotch people find but little difficulty with the non-aspirated unvoiced plosives. In aiming at the non-aspirated variety the student should think of the way in which the corresponding voiced sounds are linked with a following vowel. Thus the two words *peat* pʰi:t and *beat* bi:t should be compared, and by means of the tests mentioned in § 10, n. 1, the point at which the vibration of the vocal chords sets in should be ascertained. An attempt should then be made to postpone this vibration in the case of the voiced consonants till the instant of the release. When this attempt has succeeded the unaspirated unvoiced sound will have been attained. In other words the student should aim at producing the almost unrealisable—a voiced consonant which is unaccompanied by voice.[1] Such exercises as the following may

[1] As a rule the difference between an aspirated and an unaspirated non-vocalic plosive cannot be acquired without the aid of a teacher. The self-taught student is unable by means of the ear to check the correctness of his results.

perhaps be useful: pʰa, ba, pa, tʰa, da, ta, kʰa, ga, ka. It should always be kept in mind that pa, ta and ka are rather suggestive of the English ba, da and ga[1]. As a practical hint it may be said: make the unaspirated voiceless plosives as like the corresponding voiced sounds as is possible without their becoming actually voiced.

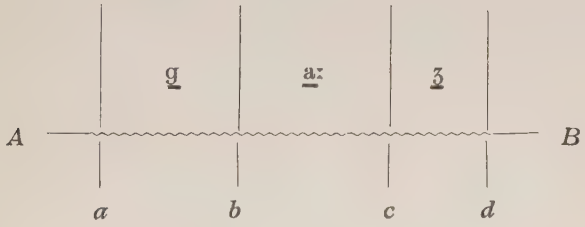
85. Aspiration is not the rule in English between voiced consonants and a following vowel, though it may be heard in the case of individual speakers. In some languages, however, especially those of India, it is necessary to be able to produce voiced plosives with aspiration, the absence or presence of which is significant. Thus the Hindustani word *bag* baːg means a 'rein' while *bhag* bʰaːg signifies a 'share' or 'destiny.' All voiced plosives as well as other consonants (and even vowels)[2] may be followed by aspiration. These aspirations vary considerably in force in different languages, and are, when weak, very difficult for the untrained ear to seize as uttered by the native speaker. They are also very difficult to pronounce without exaggeration unless they are carefully practised.

86. It has been said in § 72 that our voiced consonants, when initial, are unaccompanied by the vibration of the vocal chords during the first part of their emission, and

[1] I have frequently found that, when I have given phonetic dictation to partially trained students, an unaspirated plosive has been transcribed by the corresponding voiced sound. Thus the French word *tu* ty has been written dy, while *coûte* kut has appeared as *goûte* gut.

[2] I have heard in France *oui* wi as wiʰ or even ʍi̥ and *pardon* as pardɔ̃ʰ or pardɔ̥̃.

that when final the vocal chords cease to vibrate before the release. Now this is not the case in all languages. There are many in which the voiced consonants are really voiced from beginning to end. Such is the case in French, and the native pronunciation of such a word as *gage* g̲a:ʒ̲ would give a simplified graph like the following, which it would be well for the student to compare with that of the English word these ðiːz̲



a. Obstruction for g̲. *b*. Release for g̲.
ab. Stop for g̲.
bc. Stop for a:̲.
c. Obstruction for ʒ̲.
d. Release for ʒ̲.
cd. Stop for ʒ̲.

Fig. 12.

in § 72. In some languages, and in the case of individual speakers, these voiced consonants are preceded and followed by voiced on- and off-glides. An illustration of this is given in the figure 10. The full voicing of these consonants is, in many languages, no less important than aspiration. The acquisition of fully voiced consonants is most easily attained by beginning exercises with the fricatives, as these are capable of being prolonged as long as the breath will hold out. It is a

good thing to begin with what may be called **time exercises.** Thus if we wish to produce a fully voiced v we should count 1—2 before attempting to produce the consonant, marking the beats with the finger or the foot as musicians sometimes do. At the third beat we should both make the obstruction and at the same time set the vocal chords in vibration; during 3—4—5—6, &c., we should continue to produce the sound of friction with its vocal accompaniment, and on the stroke of 7 (or as the case might be of 8 or 9) both efforts should be stopped simultaneously. English, and many other, students will probably find the correct performance of this exercise somewhat difficult at first. If this is the case, the time exercise should be practised in the following way. Take the unvoiced and voiced fricatives in pairs, thus uttering fvfvfv . . . without any intermission of the friction but alternating breath and voice for definite periods. Supposing it is possible to continue the exercise during twenty beats we should have $\underset{1\text{-}2}{\underline{f}}\ \underset{3\text{-}4}{\underline{v}}\ \underset{5\text{-}6}{\underline{f}}\ \underset{7\text{-}8}{\underline{v}}\ \ldots\ \underset{20}{\underline{v}}$. When once full control over the fricatives is obtained there should be comparatively little difficulty with the plosives and other consonants. Should the latter still remain obstinate in the matter of full vocalisation, they should be practised with a slight ə both before the obstruction and after the release, thus əbə, ədə, əgə. This ə on- and off-glide can gradually be reduced to the point of inappreciability.[1]

[1] A series of exercises on voiced and unvoiced consonants will be found in the latter part of the book.

CHAPTER XV.

EASIER NON-ENGLISH CONSONANTS.

87. There are some important differences in the national production of certain sounds, usually described as being identical in the ordinary text-book. Reference to almost any French, German or Italian grammar written for English people will show that such sounds as t, d, n, and l, etc., are described as being the same as those of our own language. This is in the majority of cases far from being true, but these differences, which are generally due to minor variations in the position of the articulating organs, may for the present be neglected. Reference, therefore, is made in this chapter to those sounds only which may be considered from the English point of view as obviously not English.

88. The first of these non-English sounds to consider is the nasal palatal ɲ heard in the French word *campagne* kɑ̃:paɲ, in the Italian *campagna* kampaɲa, and in the Spanish *campaña* kampaɲa. To the untrained English ear ɲ sounds like nj, which it certainly resembles, but with which it is far from being identical. To produce this sound correctly the tip of the tongue must be kept well down behind the lower front teeth, and the middle should touch the hard palate in about the same position as that required for the production of j, but pressed so closely as to produce complete obstruction, as shown in Fig. 13. The soft palate takes the position assumed in the production of m or n, that is, it is lowered so as to open the nasal passages to the breath stream. If this is done the resulting sound is the consonant ɲ. In fact, if we try

Fig. 13.[1]

to pronounce n with the tongue in the j position we shall hardly fail to get ɲ. This voluntary effort does, however, sometimes fail. If that is the case we must fall back on some mechanical aid. The tip of the tongue must be kept low by means of some such instrument as the end of a lead pencil, the tongue-middle being allowed to come in contact with the hard palate as shown in the figure below.

Fig. 14.[2]

[1] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

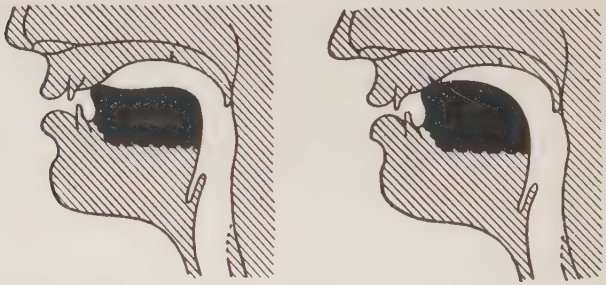
[2] This diagram illustrates the tongue and velar positions for the consonant k̠ described in the next paragraph.

89. There is also a palatal lateral consonant to be found in many languages. This sound is represented in Italian spelling by the digraph *gl*, in Spanish by *ll*, and in Portuguese by *lh*. It is the old *l mouillée* of French, still heard in South France and in Switzerland, as well as in the speech of some pedants.[1] The phonetic symbol for this palatal lateral is ʎ. Thus we should write the Italian word *figlia* fiʎɑ and the Spanish *llama* ʎama. ʎ occurs in a good many Oriental languages and dialects, and it is a very important sound for the foreign missionary to acquire. If the student, whose own language does not possess this sound, finds any great difficulty in acquiring it correctly he should use the device suggested for ɲ, but in this case trying to pronounce l with the tip of the tongue kept down by means of a pencil as shown in Fig. 14. This should produce a correct ʎ. These palatal sounds ɲ and ʎ are followed by the palatal glide j.

90. It will have been observed that our English l sound appears in the table of consonants given on page 19, in two different columns owing to its double articulation, as it has in some positions an added u quality, produced by raising the back of the tongue. This double articulation of l does not take place in the pronunciation of all languages. In French, for instance, the "tone colour" of l is much "clearer" than it is in

[1] This sound must not be confused with the so-called *l mouillé* as heard in the North of France in such a word as *fille* fi:j. The standard sound of the North is really the palatal fricative j. I have heard French people who aimed at "speaking correctly" try to get the palatal lateral, but only succeed in producing the dental lateral l followed by j.

English, and seems to have some suggestion of an i or an e value, whereas the English consonant suggests the accompaniment of some vowel of the u or the o type. This difference is due to the fact that the tongue in the French pronunciation is entirely convex to the roof of the mouth, whilst in English l^u, especially when final, both the back and the blade of the tongue are raised towards the roof of the mouth with a hollow dip between the two parts. Below are given diagrams of the position of the tongue for a foreign l, as compared with its English fellow.



English l^u. Foreign l^i.

Fig. 15.[1]

91. There is yet another typical variety of l sound, which may be heard in certain languages, amongst others Russian and Polish. In the production of this sound the action of the back of the tongue is still more marked than it is in English. It is sometimes called the **dark** or **heavy** *l*, the phonetic symbol for which is ɫ, and it is classed as a velar lateral. It has a very marked u characteristic. According to Jespersen[2]

[1] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

[2] See "Lehrbuch der Phonetik," § 136.

the blade of the tongue may be passive in the production of this consonant. In some languages, notably Polish, the two *l* sounds serve to differentiate between the meanings of words. For example, in that language *los* los means *fate*, whereas *los* ɬos means *moose-deer*. Where one kind of *l* only is found in any given language, or when varieties of the quality of *l* are dependent solely upon the position of the sound in words, it is convenient to use the ordinary l to represent it. If, however, both varieties occur as significant sounds the velar l should be represented by the symbol ɬ.[1] The correct pronunciation of this sound is by no means easy to acquire, and it is advisable to have the assistance and criticism of a phonetically-trained native or a phonetic expert.

92. To most English people, as well as to many foreigners, the sound spelled in Welsh *ll* presents great difficulty. There is really little or no reason why this should be the case, as the sound is little more than a variety of l unvoiced, represented in the phonetic alphabet by the symbol l̥; *Llan* is phonetically transcribed l̥an. Very little practice will enable the student to produce this sound correctly, but care must be taken not to substitute for it θl or xl. If possible the pronunciation should be checked by a Welshman. It is likely

[1] ɬ has such a marked u character that some Polish Grammars published in Germany, which do not use the International phonetic alphabet, transcribe it by means of u. Since the above was written contact with many educated Poles has convinced me that Jespersen is quite correct. In their language ɬ has lost with most speakers its lateral character and has "degenerated" into something between u and w. Russia, as far as I have been able to note from natives, still preserves the lateral character amongst the educated classes.

that this sound may occur in many languages other than Welsh, notably some S. African languages. A variety of l̥ is frequently heard in French in such words as *peuple* pœpl̥ *boucle* bukl̥.

93. The average Southern Englishman finds considerable difficulty in producing a rolled or trilled *r*, and some speakers go through their lives without ever using either that variety or even its English fricative fellow. As a substitute they use a kind of w sound, modified in some way or other by the tongue position. Now those who pronounce in this way usually believe that it is physically impossible for them to produce the other varieties. But unless there is some malformation of the tongue there is no real reason why anyone should not produce a rolled or any other kind of *r* correctly, for the cause of failure is neither more nor less than lack of properly directed effort.[1] Steady practice will overcome this defect if the following directions are observed. The tongue should assume a "spoon" shape at the front, with the back kept well down and the tip slightly raised. The breath should then be forced rapidly and in a strong current over the tip, which will be set in vibration, producing in most cases the desired result. Some writers on phonetics suggest an exercise which may in some cases have proved successful, but in which, in my opinion, there is little faith to be put. According to them the student should utter a series of ddd . . ., tapping the tip of the tongue against the

[1] At the end of the Vacation courses for Preparation of Missionaries, held by the Board of Study at Queen's College, Oxford, in 1912, at Queens' College, Cambridge, in 1913, and at Mansfield College, Oxford, in 1914, several of the students said that they had learnt to pronounce what they had hitherto looked upon as an impossible sound for them, namely, a rolled *r*.

upper gums as rapidly as possible: but in the majority of cases it is doubtful if this exercise will produce a rolled r, because the succession of ddd . . . is a voluntary muscular effort which gives no play for the elastic resistance of the tongue to the breath stream. An exercise, which as a rule produces a much better result, is to try to pronounce θrθrθr . . ., drawing back the tip of the tongue with a slight upward curl towards the gum ridges immediately after the θ is finished. At first there may be only a single tap of the tongue as the result, but steady practice will result in a true rolled r. The θ can be gradually eliminated and a perfect rolled r will have been acquired. The student must not think that because he does not get good results at first that his case is hopeless. Nothing but steady practice will enable one who has considered himself physically incapable of producing a true r, to attain the desired result, and he should take example by the late Henry Sweet, one of the greatest phoneticians the world has ever seen, who used to devote ten minutes every day to the practice of the different varieties of *r* sounds. The diagram given in Fig. 16 below will

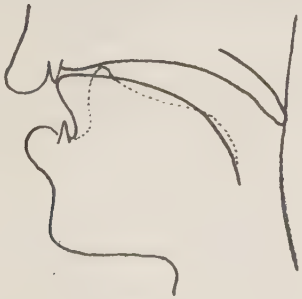


Fig. 16

suggest the positions of the tongue needful for the θrθrθr . . . exercise. The same exercise will produce ɹ if the tongue tip is pressed so firmly against the palate as to prevent rolling.

94. The kind of *r* heard along the banks of the Tyne (the Northumbrian bûrr) has already been referred to in § 14. It differs entirely in formation and quality from that which is formed by the rolling or trilling of the tip of the tongue. In this case the rolling is produced by the elastic resistance of the uvula to the breath stream. It is a sound somewhat difficult, but by no means impossible, for Southern English people to produce. It is closely allied to the sound of gargling, and there are very few people who cannot gargle. In fact the majority of people who say they cannot gargle are those who have made up their minds that they will not do so. Those who are of this opinion should try to imitate the growl of a dog.[1] They will find that the lower part of the velum, the uvula, is set in violent vibration, which will probably be at first very rough and unlike a human speech-sound. Ancient Latin grammarians have called *r* the *littera canina*, which would lead us to think that this variety of rolled consonant was, at least, not unknown to the classical languages. When this growling or gargling sound is once produced it is only necessary to raise the back of the tongue a little and to reduce the breath force and a real trilled uvular *r* will be the result. The phonetic symbol for this sound is ʀ when voiced and ʁ when

[1] I have found this sound very useful, when accompanied by the rattle of a chain, in frightening away beggars and hawkers.

unvoiced. Fig. 17 below gives the positions of the organs of speech in the production of the sounds ʀ and ʁ.

Approximate limits of the position of the uvula are indicated by_____ and.....

Fig. 17.

95. The first non-English fricative sound to note is a bilabial. It is the sound we hear when we blow out a candle or a match and it is very similar in acoustic effect to the normal English f. As a speech-sound it is more or less accidental in European languages, and its occurrence is mainly due to assimilation. It is the Japanese *f*, the phonetic symbol for which is ɸ. A voiced variety of this sound, the symbol for which is β, is common to a good many languages. It is frequent in Indian and African tongues. In European languages it is found in Castillian Spanish as the normal intervocalic pronunciation of an orthographic *b*, e.g. *saber* saβer. In some dialects of German it replaces a normal w or v after ʃ, k or ts, e.g. *Schwert* ʃβe:ʀt. In Dutch and Flemish it may be heard as the usual pronunciation of an orthographic *w*. The difference between β and w depends on both the tongue and

the lip positions. In w the lips are rounded and pushed forward and the back of the tongue is raised towards the u position. In ʋ, on the other hand, the lips are spread and the tongue is kept more or less in the ə position. There are several varieties of this sound, which the student should try to produce by modifying the degree of lip opening and protrusion.

96. Among the labiodental fricatives there are no sounds which present any difficulty to the English student. The chief differences between nation and nation are the result of the force with which the sounds are emitted and the measure of pressure of the lower lip against the upper teeth. In the case of some Scandinavian races the contact between the lip and the teeth is very feeble and the resulting sound is rather like that represented phonetically by ɾ or ʋ. Those who find any difficulty in producing a well marked f or v sound should make a point of putting the outer edge of the lower lip well behind the edges of the upper front teeth, making a semi-plosive release which will be found to be suggestive of the combination pf or bv. This plosive effect can be reduced as circumstances require. The character of the f and v sounds produced depends not only on the degree of pressure, but also on the formation of the teeth. If these are closely set firm, contact with the lower lip will produce a true plosive resembling p or b. If there are spaces between the teeth, firm contact will produce f or v, and a plosive can be produced only by raising the lower lip so as to come in contact with the gums.

97. A sound usually believed to be very difficult for English people, as well as for French, Italians and

many other races, is the palatal fricative heard in the German word *ich*, which is written phonetically ʔiç. Most people whose native language does not possess this sound as a regular and accepted consonant replace it in the pronunciation of a foreign language by ʃ or k.[1] There should really be no difficulty in producing ç correctly, as it frequently replaces j, without our realising the fact, in such words as *huge* hju:dʒ or (h)çu:dʒ, *human* hju:mən or (h)çu:mən. More often than not, probably, the j position is anticipated during the emission of the so-called h, which becomes itself nothing more than a breathed j, or, in other words ç. Thus the correct transcription of the two words cited above when rapidly and somewhat negligently pronounced would be çu:dʒ and çu:mən or çju:dʒ and çju:mən. If by any chance the student does not in his normal pronunciation of these words produce the initial ç he may be able without much difficulty to acquire it by prolonging the j of the word *youth* ju:θ and then trying to breathe it. The sound ç presents little difficulty to the Scotch, who have it regularly in their word *nicht* niçt for *night*.

98. A consonant which strikes many Englishmen as somewhat similar to ç, but which is really quite distinct from it, is the final sound of the German *noch* nɔx. This is the velar correspondent to the palatal ç, and it might be described as a "fricative k," differing from the plosive variety in the fact that at no time during its production is the breath passage completely closed. As shown in the transcription of the word *noch*, this sound

[1] This is also the case with natives who speak dialects. I have heard in Hesse mɑʀbuʀʃ or mɑʀbuʀk for mɑʀbuʀç *Marburg*.

is represented phonetically by the symbol x.[1] The difference between the palatal ç and the velar x is well heard in the commonly uttered German expression *noch nicht*, nɔx niçt.

99. Corresponding to the sound x, which is unvoiced, there is naturally a voiced counterpart represented in our phonetic alphabet by the sign ɣ. It is found in Dutch and Flemish as well as in Danish intervocallically. The Danish name *Aage* is pronounced ɔ:ɣə. It is by no means an easy sound to produce, especially when initial, and many natives of countries in the language of which it is supposed to be a regular sound replace it by the unvoiced variety. Thus in Dutch the augment of the past participle, *ge-*, is often pronounced xə- instead of ɣə-. The student of speech-sounds should, however, train himself to produce this voiced velar fricative in all possible combinations. Exercises are given later.[2]

CHAPTER XVI.

THE PRINCIPAL NON-ENGLISH VOWELS.

100. Though there are many non-English consonant sounds besides those discussed in the preceding Chapter,

1 English people have a tendency to produce this sound too far back and to make it a uvular instead of a velar sound. The result is that there is both vibration of the uvula and also some salival disturbance suggestive of gargling, which is rattling and unpleasant to the native ear.

2 In certain parts of Germany ɣ may be heard for g, and even for ʀ, and no difference is made between such words as *Waren* and *Wagen*.

we must leave them for the present and turn our attention to the principal non-English vowel sounds. In the table of English vowel sounds on page 24 there are fifteen symbols to represent the fifteen distinct vowels met with in Southern English pronunciation. This number is, however, but a small proportion of those which are to be met with in the speech of mankind. It is, of course, impossible, within the limits of this book, to describe all the vowel sounds which have been identified in various languages, but we may at least study the main types, beginning with those which are to be heard in the most usually studied European languages. The student who can analyse these sounds and reproduce them will have little difficulty in picking out the chief characteristics of any others he may come across.

101. We have already seen that there are three varieties of the a sounds in Southern English, namely the ɑ: of the word *father* fɑ:ðə, the a heard as the first element of the diphthong of the word *high* hai, and the "short *a*" of the word *hat* hæt. Rich as our language is, it by no means exhausts the list of possible *a* sounds. The International Phonetic Association recognises that there are many varieties between the ɑ: of *father* and the æ of *hat*, but it has not thought it necessary to provide a special symbol for each of them. As few, if any, languages possess more than the three varieties cited above, the three symbols suffice in practice, and to employ more would needlessly cumber our alphabet. It may, however, be necessary for scientific purposes to discriminate more varieties, and if we wish to do so we should take our own speech as the standard and indicate

minute shades by means of diacritics. Thus, if we find in any given language that the highest articulating part of the tongue is lower than that required for the production of the vowel ɑː of our word *father*, we can indicate this fact by placing the sign ˕ after the vowel symbol. If, on the other hand, experience shows that the tongue position is higher, we may make use of the same diacritic inverted ˔. But the height of the main articulating portion is not the only factor to be considered; we may find that there is a sensible difference due to the advancing or the retraction of the highest part of the articulating organ. Advancement may, when necessary, be indicated by the sign ˖, and retraction by ˗. (See also § 139.) By the use of these diacritics it is possible to indicate a large number of identifiable variations from what we may consider the standard sounds of our own speech. Thus if we find that the *a* sound of any language is produced with the highest part if the tongue lower and more retracted than is the case for our own ɑ, we may write ɑ˕˗. If it is lower but more advanced we should express the difference by ɑ˔˖. The same system of notation may be applied to any other type of vowel (or even of consonant) sound[1]. The student of phonetics should note how the pronunciation of those with whom he comes in contact differs

[1] It generally suffices in a practical transcription to indicate once for all the articulation of a sound, and then to dispense with all diacritical marks, using the symbol of the International alphabet which most nearly resembles that of the language being transcribed. I generally in my classes use ↑ ↓ ← and → instead of ˔ ˕ ˖ and ˗, as being more easily remembered and more suggestive of the difference in position. Some phoneticians use + for an advanced and − for retracted.

from his own, and should try to record this difference in phonetic notation. He will find it a valuable exercise. As an example, he might learn to differentiate between the Southern English vowel in *father* fɑ:ðə[1], the Norman French ɑ˕ of *bas* bɑ˕, and the German ɑʳ *Vater* fɑʳ:təʀ.

102. The half open ɛ heard in our own language as the first element of the diphthong ɛə of the word *hair* hɛə has, like ɑ, several varieties. The extreme limits are heard in the French word *père* pɛ:ʀ, which is pronounced with a most markedly open vowel, and the more close vowel of the similarly, but not identically, pronounced English *pear* pɛə. Intermediate between these two is the German "open" ɛ of the word *Herr*, which from the point of view of French sounds would be transcribed hɛ˕ʀ. A variety of this vowel may be heard in the Northern English pronunciation of the word *get*, which might be transcribed ge˕t.

103. The vowel which is represented in the transcription of Southern English by e is found short only as a rule. When we have the so-called long *a* it is really a diphthong ei, as in the word *gate* geit, but in many, if not most, foreign languages we find the pure long vowel. This sound is one of the most difficult for English people to acquire. They have nearly always a very

[1] At the present time long ɑ: of Southern English shows a "forward" tendency, and I frequently hear fa:ðə or faʳ:ðə for fɑ:ðə. This tendency is not confined to English. I have noticed the substitution of a (and even nearly æ) for ɑ both in French and German. In what might be called "Cockney" Danish, ɑ: and a: become æ:, as in the word *gade* gɑ:ðə or ga:ðə *street*, which is often pronounced gæ:ðə, g here being equivalent to g̊ or unaspirated k.

marked tendency to follow the e̲ by an i̲ sound, due to a slight raising of the front of the tongue accompanied by some measure of narrowing of the opening between the lips. To check this tendency the sound should be practised before a glass, and should be uttered at any given length without any change in the lip position. It is probable that if the lips are immobile the tongue has also maintained its position unchanged.[1]

104. Apart from the unchanged quality of this type of vowel in many foreign languages, due to unchanged position of the tongue, there is another point in which they differ from the English long *e*. This depends on the tenseness of the muscles of the tongue combined with the muscular activity of the lips. The foreign sound is to the English ear somewhat suggestive of i̲, but there is a difference which must be heard to be appreciated. It is a good thing, when possible, to get a Frenchman to pronounce the *été* ete̲, or a German to say the word *See* ze̲:, and then try to imitate the sound, prolonging it as much as possible without in any way changing its "timbre." This will not be easy at first, as both lips and tongue will insist in assuming the positions to which they have been accustomed in their normal speech, but practice will enable the student to obtain perfect control over these organs. There are of course several varieties of e̲ sounds, which can, when

[1] This does not necessarily follow, and watch should also be kept on that part of the tongue which can be seen between the open teeth. If there is any raising of the tongue-front the student may be sure that he is diphthongising.

necessary, be indicated by the diacritical marks given in §§ 49 and 101.[1]

105. The last of the series of front vowels consists of the different varieties of the close i, of which, as we have already seen, there are two types in our own language, as heard in the words *sit* sit and *seat* si:t. In English the vowel is tense when long, and lax when short. A similar rule holds good for German, as may be illustrated by the words *litt* lit and *Lied* li:t. There are, however, many languages in which quality is quite independent of quantity, and we have a good example of this in French, in which the quality of the vowels in *pis* pi and *pire* pi:r are identical.[2] Great care should be taken not to diphthongise this vowel, when long, in speaking foreign languages. The Southern English ij or iə should not be substituted for the foreign pure long i:. Especial care in this matter is necessary before the consonant l and r. As in the case of other vowels, several varieties may be distinguished and marked by means of diacritics. If for any reason it is necessary to differentiate between two types ɪ may be used for the laxer and more open one.

106. Attention may now be turned to the back vowels. In our own language the first of these which we come across is that of the word *hot* hɔt.[3] In

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1 I think German e is slightly less close and tense than the French vowel. Opinions, however, differ on this point.

2 Slight differences in quality are to be found in French, but these are dependent on stress rather than on quantity.

3 The vowel ɑ is also usually classified as a back vowel, and in my own case it is certainly such, though advanced as compared with ɔ. Some of my colleagues, however, produce ɔ

the utterance of this vowel the lips are, in the case of many speakers, in practically the same position as they are for the sound ɑ.[1] It is one of the vowel-sounds, of which the production may be easily observed by means of the hand-glass. Now this vowel is, one might venture to say, peculiarly English, and it is one of the most difficult of our vowel-sounds for a foreigner to acquire. In return, their corresponding, though by no means identical, vowel presents very considerable difficulties to English people. This difficulty experienced by us in pronouncing the foreign sound, and by foreigners in pronouncing the English sound, arises from three main causes: 1, difference of tongue position; 2, difference in degree of tenseness; and 3, difference in the degree of lip activity. A typical variety of the non-English ɔ sound is to be heard in the French open *o* (*o* ouvert) of the word *note* nɔt,[2] which English people usually mispronounce nɒt or nʌt. In the French vowel the articulating part of the tongue

with an advanced tongue position; others do the same for ɑ. Experimental phonetics will doubtless, by means of such delicate instruments as are now in use at University College, London, show how identical results are arrived at under varying conditions. An experienced phonetician can produce identical results by a species of "juggling."

1 Many people pronounce this vowel with a slight degree of lip-rounding.

2 In practice it is found quite satisfactory to use the same symbol ɔ for the French, German, and English varieties of this vowel, as, so far as I know, no single language contains more than one type. If we desire to compare two languages with different classes of this vowel we may use ɒ for the English and ɔ for the French and German types. If found necessary ò may be used for the short German *o* as in the word *Sonne* zònə, usually transcribed zɔnə.

is not only higher, but also more advanced than it is for the English sound. The lips, too, are not as a rule so widely opened for the French vowel, and there is very perceptible lip-rounding. In the German type the tongue is higher than it is for our own vowel, but not so advanced as for the French. In some Scandinavian languages there exists a vowel, which is very like the English vowel, but which is characterised by a very tense articulation accompanied by a drawing together with some muscular tenseness of the lower edges of the velum. A very similar sound seems to exist in Chinese and Japanese, for natives of some parts of these countries not infrequently replace the English sound ɔ̲ by this tense vowel ɔ̲́ or ɒ̲́. The short *o* of a foreign language is one to which the student should give particular attention, and he should not feel satisfied until he has assured himself of the points in which the native pronunciation differs from his own.

107. The next class of vowels which to examine is the half-close *o* type, a variety of which is heard in the first element of the diphthong of the English word *boat* bout. This is a laxly articulated vowel with the back of the tongue raised towards the soft palate and unaccompanied by marked lip-rounding. It is very near to the short open ɔ̲ of the German word *Sonne* zɔnə or zɔ̀nə. The French 'o fermé' is of this type, but it differs from the first element of the English diphthong in the fact that the lips are considerably rounded and protruded, and that there is a noticeable degree of muscular tenseness in the tongue. The German long close *o* is not quite so tense as the French variety, nor is the lip activity so marked (cp., however, n. 1, p. 79).

These *o* sounds should be practised with the hand-glass so that the student may observe that there is no change in the lip position during their production, however much they may be prolonged. Exercises are given in the latter part of the book.

108. The last of the "normal" or lip-rounded back vowels to be dealt with in this section of non-English vowel sounds is that of the u̲ type, of which, as we have already seen in § 48, we possess two varieties, the one lax and the other tense. In English the degree of lip-rounding with which they are produced is not very marked, nor is there any great protrusion of the lips. In other languages, notably French, the lip activity is very noticeable. In German there is also some considerable degree of lip-rounding and protrusion, though occasionally less than in French. In German, as in English, quantity has an influence on the quality of the vowel, the short variety being lax and the long tense. This must not be taken to be the rule in all languages, as may be seen in French, where in such words as *tousse* tus and *tous* tuːs the quality of the vowel is unchanged by the quantity. English speakers should train themselves to produce either quality long or short, and should, above all, avoid the tendency to diphthongise the long variety by substituting uw or uə for uː—*especially before l and r.*

109. In the vowel sounds hitherto discussed there has been a greater or less degree of sympathetic action between the tongue and the lips. This is practically always the case in English, for the higher the front of the tongue is raised the more the corners of the lips are separated; the higher the back of the tongue is raised the more the corners of the lips tend to

come together. But in many foreign languages this sympathetic action is, as it were, for some of the vowels, reversed, and the lips, instead of being spread further apart for the front vowels, are more and more rounded and protruded as the front of the tongue is raised. There are also languages in which the opposite is the case, and the lips become spread lengthways as the back of the tongue is raised towards the roof of the mouth. Such vowels as these are known as **front-rounded** and **back-unrounded** respectively. The front-rounded are the more common in the usually studied European languages. Russian and Scotch Gaelic possess one back-unrounded. Among the front-rounded vowels are those heard in the French words *peur*, *peu* and *pu*. As a rule, the English, amongst other people, find great difficulty in producing these sounds with any degree of correctness, but there is no reason why they should not get the exact sound if they find out and put into practice what they are told as to the manner of their production.

110. The first of these vowels to be considered is that of the French word *peur*. To produce this vowel sound, represented phonetically by the symbol œ, it is only necessary to put the tongue in the position for ɛ and the lips in that for the o of the French word *note* not. The English student will find the exercise rather difficult at first, as the lips will be inclined to sympathise with the tongue, or the tongue with the lips. This difficulty may be overcome in two different ways. First, the sound of the French vowel o should be produced and the tongue position fixed and that of the lips noted. Then, without any change of position

of the lips, the tongue should be advanced to the position demanded for ɛ̱. In other words, one should try to pronounce ɛ̱ with rounded lips. Secondly, pronounce the vowel ɛ̱; and then, without changing the position of the tongue, round the lips as would be done to utter the French ɔ̱. Either exercise should produce the correct sound of œ̱.[1] There are, of course, different shades of this vowel, which may be marked when needful by means of diacritics, as in the case if the varieties of ɑ̱. Generally speaking, this is not necessary, and it may be added that, as a rule, the front-rounded vowel has practically, though not exactly, the same tongue position as its corresponding unrounded fellow.

111. The half-close front-rounded vowel is usually more difficult for English people than the previously mentioned vowel, but those who have succeeded in producing the tense French e̱ should have little difficulty in pronouncing its rounded counterpart. It is only necessary to put the tongue in the position for this e̱ and the lips in the position for a close and well-rounded o̱. The result will be the sound that we write phonetically with the Danish letter ø̱.[2] If this method fails to produce the required sound it may be got by beginning with a tense

[1] A very suggestive symbol for this sound is a combination of ɛ̱ and ɔ̱. I hope that before long the International Phonetic Association will see its way to adopt this symbol (already used by some phoneticians) officially. See specimen of phonetic writing.

[2] As in the case of œ̱, a more suggestive symbol is used by some phoneticians, being a combination of e̱ and o̱, namely ɵ̱. This sign I hope also to see adopted by the International Phonetic Association. The French word *peu* would then read pɵ̱ in phonetic script, and we should write the German word *Söhne* zɵ̱:nə̱.

and somewhat close o̲, and then, without changing the lip position, trying to give utterance to the tense e̲. Or one may pronounce a tense e̲, and at the same time round the lips as for o̲. This vowel, like œ̲, has varying quality according to the national quality of the corresponding unrounded e̲. For example, the German ø̲ is slightly less close and tense than its French fellow. (Cp. note 1, page 79.) If necessary, diacritics may be used to mark the difference.

112. If the lips be rounded whilst the tongue is in the position for pronouncing i̲, we shall produce one of the varieties of the vowel y̲ heard in the French word *pu* py̲. English people frequently fail to produce this sound correctly, owing to the fact that they do not round their lips sufficiently. The lip opening should be no more than sufficient to admit of the passage of the unsharpened end of an ordinary lead pencil. If the correct sound is not obtained at the first attempt, the student should begin with the sound of u̲, and then, without change of lip position, try to say i̲. Another way of acquiring this vowel is to begin with i̲, and then, keeping the tongue motionless, to round the lips as if for u̲. There are several varieties of this front-rounded vowel, the most typical of which are those heard in the German words *Füsse* fy̲ːsə and *flüsse* flys̲ə respectively. The long sound is the more tense, as is the case with the corresponding front unrounded vowel iː. If it is necessary in any particular language to distinguish between the two varieties, apart from their quantity, y̲ may be used for the lax, and y̲ for the tense type. Thus *Flüsse* would be transcribed flys̲ə and *Füsse* would appear as fy̲ːsə.

113. Persons whose native language has not these rounded front vowels frequently mispronounce them through not anticipating the formation of the vowel sufficiently early. Thus in the pronunciation of the French "article partitif" *du* dy we often hear diu, djy or dju, because the lips have not been rounded before the tongue position has been assumed. The lip position should be simultaneous with, if not anterior to, that of the tongue. In pronouncing the word *du*, for example, the d should be emitted with the lips already in the position for the y.

114. The chief back unrounded vowel which requires our attention is that which is produced by the tongue in the position for u, with the lips in the position for ɑ or a. There are many varieties of this sound, some of which are very difficult of analysis. But the typical one is that which may be heard in Russian, in Gaelic, and in the Marathi-Brahmin pronunciation of Sanscrit. The student should try the effect of pronouncing the tense and lax types of u with various degrees of lip opening. The most usual type is probably that in which the tongue is in the position for the French tense u with the lips in that for a. In itself it is a sound not difficult to pronounce, but it presents some difficulty when following a labial consonant. The phonetic symbol for this vowel is ɯ. All the back vowels may be similarly unrounded. The Marathi "short *a*" is described as an unrounded o, the phonetic symbol for which is v. The absence of lip-rounding can, if necessary, be indicated by the symbol ̜ placed after the vowel

sign, or the unrounded vowel might be used as a diacritic to indicate the lip position, thus :—u̲ᵃ, o̲ᵃ, ɔ̲ⁱ, etc.

115. The vowel sounds hitherto dealt with have been of the kind which are produced by the passage of the breath through the mouth only. These are therefore called **oral** vowels. But in many languages the breath stream is divided, part passing through the mouth and part through the nasal cavities. This difference is due to the action of the velum. In our own language the velum is raised in such a way as to touch the back wall of the pharynx and so shut off the passage through the nose during the production of our vowels. I am, of course, here speaking of the normal pronunciation of well educated people.[1] If the velum is allowed to hang laxly without reaching the back wall of the pharynx both the oral and the nasal passages are open to the outgoing breath-stream. We have then the phenomenon which is known in the language of phonetics as **nasalisation.** The presence of nasalisation can be simply demonstrated as shown in the note to § 23. Nasalisation of vowels in English is either accidental or dialectical, and is generally a more or less negligable quantity as far as vowels are

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1 In the Cockney dialect the passage is frequently imperfectly closed, and we hear in consequence what is usually called speaking through the nose. The London newsboy may be heard crying ĩ:(v)nĭn p̃aĩp̃ɔ̃, p̃ being an m̲ with a weak oral explosion. In North American English the same thing occurs, especially when the vowel is contiguous to a nasal consonant. Consonants of a non-plosive type may also be nasalised, e.g. j̃, x̃, l̃, etc.

concerned.[1] But there are many languages in which nasalisation plays a very important role. To cite French only, we can find many pairs of words in which the absence or presence of nasalisation is significant.[2] The phonetic symbol for nasalised vowels is ˜ (the Spanish *tilde*) placed over the vowel symbol. Thus the French for *peace, paix*, would be transcribed p̲ɛ̲ and *bread, pain*, would be written p̲ɛ̲̃. Other pairs of words are *grand* g̲r̲ɑ̲̃, *tall* or *great*, and *gras* g̲r̲ɑ̲, *fat, temps* t̲ɑ̲̃, *time* and *tas* t̲ɑ̲, *heap*.

116. It is, of course, possible to nasalise any and every vowel, but few languages (if any) possess a complete set of nasalised vowels. Still the student should train himself to nasalise all the vowels he can produce. He will probably find the close varieties the most difficult. ĩ̲ and ũ̲ generally give a good deal of trouble, and these should be practised before a glass, as shown in the note to § 23, until complete control of the action of the velum is obtained.[3] To those who already speak French or Portuguese nasalisation should present little difficulty. It is, however, essential that the foreign missionary should be able to produce the nasal vowels, as there are comparatively few fields in which they do

[1] Even correct speakers frequently put a slight amount of nasalisation into vowels which occur between nasal consonants. The vowels in the word *morning* m̲ɔ̲ːn̲ɪ̲ŋ̲ have generally a nasal character, which though inappreciable to the average ear, is readily detected by instrumental tests.

[2] The tongue position of a nasal vowel is not always identical with that of its oral correspondent. This difference is frequently brought by sympathetic action of the tongue with the velum

[3] This exercise is also useful for those persons who nasalise what should be oral vowels.

not exist. It is best to begin the study of nasal vowels with those of the open type, for example ɑ̃ the sound heard in the French word *grand* grɑ̃. A very good exercise to practise is one in which the oral and the nasal vowels alternate without any pause between them, e.g. ɑɑ̃ɑɑ̃..., ɔɔ̃ɔɔ̃..., etc. In a cold atmosphere the glass, the use of which has been suggested on page 15, will help to show when there is or is not any nasalisation.

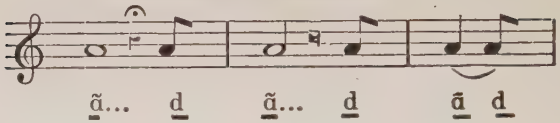
117. Students should note carefully whether a nasalised vowel is or is not followed by a nasal consonant of the glide nature. In the so-called best pronunciation of French, orthographic *m* and *n* merely serve to indicate that the preceding vowel is nasalised, the consonants themselves being silent. The words *bombe*, *grande*, and *longue* should be pronounced grɑ̃:d, bɔ̃:b, lɔ̃:g, not grɑ̃:nd, bɔ̃:mb, lɔ̃:ŋg. The latter pronunciation is very usual with English people in speaking French, and it is by no means uncommon in the South of France.[1] This fault is due to tardy raising of the velum, the lips or tongue being placed for b, d and g, before the nasal passage is closed. Hence the corresponding nasals m, n and ŋ are produced. This defect may be overcome by means of a time exercise, suggested in the following notation.

ɑ̃ ..... pause d
1, 2, 3, 4, 5,
ɑ̃.....slighter pause d.
1, 2, 3, 4, 5
ɑ̃.....d
1, 2, 3, 4, 5

gradually eliminating the pause entirely.

[1] Northern French people say that Southerners "speak like the English."

This may be musically represented



Conscious control of the velum should be aimed at. (See exercises at the end of the book.)

CHAPTER XVII.

MORE DIFFICULT NON-ENGLISH CONSONANTS.

118. The student, who has made a careful study of the speech-sounds hitherto dealt with, is now in a position to enter upon the question of the sounds of foreign tongues, which have been described as very difficult or even impossible for Europeans to acquire. The list of these sounds given in this book makes no pretence to being exhaustive; it is merely meant to be suggestive. The student of Phonetics should be warned against the text-book which says, "This sound is impossible for the European" (sic). As has been said before, no speech-sound is impossible to the normally formed speaker.[1]

[1] Certain African tribes have a peculiar sibilant labio-dental, for the production of which it is said to be necessary to knock out two of the lower front teeth. This loss of teeth may make the sound easier of production, but I do not believe that it is necessary. Our English θ is a dental, but I know many *toothless* people who pronounce a perfect θ.

119. In many languages there exists a pair of palatal plosives, produced by a complete stoppage of the air passages in a position similar to that required for the production of the partially obstructed j, ç and for the nasal ɲ. The most widely known language in which this is the case is French. And even in this language the sounds are not looked upon as standard. Nevertheless in certain circumstances t and d are pronounced, owing to assimilative tendency, with that part of the tongue which is the main articulating factor in the production of j, whilst in very similar circumstances k and g tend to become the same sounds. This is generally the case before close front vowels. In some languages this sound is regular, and is the recognised pronunciation of orthographic signs: in others it is accidental, and has to be represented, when an author is desirous of indicating dialectic peculiarities, by some "twisting" of the usual spelling. Examples of this are not infrequent in French, where we may find the provincial pronunciation of *Dieu* given as *Gyeu*, and that of *tiens* as *quiens*. In English, the word *kind* may be found in Victorian authors, who wish to represent Cockney pronunciation, with the spelling *kyind*. These sounds, which are normal in Hungarian and some Indian dialects, are represented in phonetic script by the symbols ɟ for the voiced, and c for the unvoiced form.[1] These plosives may be acquired by trying to say t and d or k and g

[1] It may be mentioned here that all the palatal consonants c and ɟ like ɲ and ʎ as noted in § 89, are generally followed by a glide of the j type. It is not necessary as a rule to record this glide in a practical transcript.

with the tongue in the j̲ position. The tongue may be controlled as suggested in § 89.

120. Two very difficult plosive sounds for English people, and indeed for most Europeans, are the Arabic (or Hebrew) *qaf* and its voiced correspondent. They are somewhat similar to k̲ and g̲ respectively, but the closure is made by the lowest part of the velum (with the uvula) and the most backward part of the tongue. The sounds are not so difficult before back as before front vowels, and their acquisition before front vowels is only to be attained by long and patient practice. The phonetic symbol for the unvoiced sound is q̲, and for the voiced ɢ̲ is used.

121. In note 1 on page 18 the glottal plosive, known as the *alif-hamza*, has already been referred to. This sound is produced by closing the glottis and releasing the closure with a sudden plosion. The effect on the ear is that of a very weak cough intended to clear a slight obstruction from the passage between the vocal chords. In the language of phonetics this consonant is called the **glottal stop**, and it occurs quite regularly in some languages as a significant sound. So far as I am aware no European language has any alphabetic sign for the sound, but most oriental languages give it a place in the alphabet. The phonetic symbol is ʔ̲. Among European tongues, that in which the significant rôle of this sound is the most marked, is Danish. There are many pairs of words in this language the meanings of which are differentiated only by the presence or the absence of the glottal stop. To cite only one or two very common examples, there are manʔ̲ *a man* side by side with man the pronoun *one*, hunʔ̲ *a dog* and hun̲ *she*,

mo^{9}ʀ *murder* and moːʀ *a mother*. The sound may be found not only before or after any given speech-sound, but it may also be noticed in the body of the sound itself, dividing it, as it were, into two separate parts. This is more especially the case with lateral and nasal consonants.

122. There is a somewhat difficult consonant of the nasal class, produced by passing the breath through the nose with the tongue in the position for g. This sound is heard in Esquimaux and is represented in phonetic script by the symbol ɴ.[1] It is a sound not so difficult to produce if the g position has been acquired and the passage to the nasal cavities is left open by the lowering of the velum. It is suggestive of ŋ in the same degree that ɢ is reminiscent of g.

123. It has already been said that every unvoiced consonant may have an voiced counterpart and *vice versa*, and the English w is no exception to this rule. In some dialects of the South of England, as well as in the North Riding of Yorkshire, the initially aspirated w of the word *which*, pronounced in many parts of Scotland hwitʃ, is replaced by a breathed w, the phonetic symbol for which is ʍ. Thus in Essex one may hear ʍitʃ instead of hwitʃ or witʃ. This difference may in certain cases be significant, and many speakers of English distinguish between *witch* witʃ and *which* hwitʃ or ʍitʃ.[2]

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[1] I suggest in the specimen sheet of phonetic writing, instead of ɴ, a sign which is much more in keeping with the type of letter used for the other nasals dependent on tongue position.

[2] This tendency to make a distinction between the pronunciations of *w* and *wh* in such words seems to be dying out, and it leads to very little practical inconvenience.

124. A fricative, which is as a rule very badly pronounced by English people, as well as by speakers of all languages which do not possess the vowel y, is that heard as the second sound in the French word *puis*. This consonant is represented phonetically ɥ, and consequently the word *puis* is transcribed pɥi. For this sound we are in the habit of substituting w, a practice which shocks the French ear. The action of the lips is practically the same as for w, but the peculiar characteristic of the consonant depends on the position of the tongue, the front of which must be raised to the i position. In other words, the consonant ɥ has the vowel value of y combined with the consonant value of w. The difference between ɥ and w may be significant. In French, *Louis* lwi is a proper name, whilst *lui* lɥi is the pronoun meaning *him, her*, *fouir* fwiːʀ means *to delve*, *fuir* fɥiːʀ *to flee*. We find ɥ breathed, owing to assimilation, when contiguous to a non-vocalic sound. As there is no special symbol provided for this unvoiced ɥ we write ɥ̊ if it is needful to make the distinction.

125. There are in the velar class two fricatives not easy of production. The voiced form of these is known as the Arabic "ghain." These sounds are generally described in the standard text-books on Arabic and other Oriental languages as "impossible" for the European to learn.[1] This is not true, and the only

[1] I am unable in Oriental grammars to trace a name for the unvoiced "ghain," though there is no doubt that such a sound must exist in some languages. In Arabic and Persian grammars the consonant called "'ain" is treated as a fellow of "ghain." "'ain" is a sound of entirely different articulation. (See § 127.)

excuse for such a statement on the part of the writers of such grammars is that they know little or nothing of phonetics or physiology. If the pronunciation of ɢ (or g̲) has been acquired, that of unvoiced "ghain," which is phonetically written ʁ̲ should present little difficulty. It is only necessary to aim at x̲ with the tongue in the ɢ position to arrive at the unvoiced "ghain." When success is attained with this sound the vocal chords can be set in motion and the voiced sound will be acquired. The voiced sound is written ɣ̲. The position of the articulating organs is shown in the figure below. These two velar fricatives vary consider-

Fig. 18.[1]

ably in acoustic effect. In some cases they are quite "smooth" and are rather like a very deeply retracted German x̲ and ɢ̲; in others they are accompanied by some slight vibration of the uvula, together with a rattling (somewhat suggestive of the death-rattle), partly due to the salivary discharge.

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1 Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

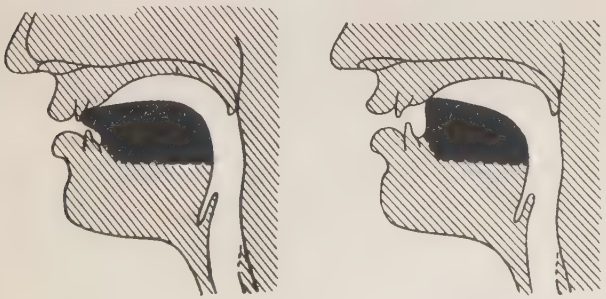
126. In § 34 mention has been made of the voiced h represented by the symbol ɦ. The employment of this sound is important in Arabic and cognate tongues, as it may serve to differentiate meanings. The best way to acquire this consonant is to practise the utterance of such English words as *aha* əɦɑː or ɑɦɑː, *oho* oɦou, *boohoo* buɦuː, and *ahoy* əɦɔi, with one of the tests for vocalisation as suggested in the note to § 10.

127. The last two consonants to deal with as type-sounds find the phonetician on debatable ground. Many authorities, including the late Henry Sweet, considered them as bronchial sounds. Others look upon them as glottal. Which of the two ideas is the true one will be doubtless settled in the near future by means of instruments.[1] These consonants are the Arabic *ʿain* and its unvoiced fellow *hha*. The phonetic symbols for these sounds are ʕ and ʜ. I am doubtful as to ʜ being the true unvoiced fellow of ʕ. As a native speaker utters the sound it strikes me as being a very strongly whispered *h*, somewhat of the nature of a "stage whisper," produced in all probability by narrowing of the false glottis. The sound ʕ at any rate is not difficult to learn if once heard, though description alone will fail to indicate its nature. A very good, though seemingly ridiculous, way of getting at ʕ has been suggested by D. Jones, and I have seen

[1] Of course I recognise the existence of bronchial sounds. No one who has ever suffered from bronchitis could fail to do so, but I do not think that any sound produced in the bronchial region is used as a speech-sound. If matters are pushed to this point, it is reasonable to say that the bronchial or pulmonary wheeze heard when a doctor asks a patient to pronounce 999 is also a speech-sound.

the result pass the test of a competent native teacher. This distinguished phonetician says, "Sing the lowest note you can, and then try to go two notes lower." The sound ɢ may be heard in the name of the successful undoer of the "Forty Thieves," *Ali Baba*, whose first name is phonetically represented ɢɑːli.

128. Up to the present all consonants formed by the same articulating organ, or part of the organ, have been treated as identical. Though this is from a general point of view true, there are shades of sound, due to differences in national manner of articulation, of which notice should be taken. The most important of these differences is found in the production of the dentals.[1] There is considerable difference between the articulation and, in many positions, the resultant sound of the English and the French t̪. Most French "dentals" are true dentals, whereas all English so-called dentals, with the exception of θ̪ and ð̪, are, as has been said before, alveolars. (In figures (*a*) and (*b*) the tongue positions for dental and alveolar t̪ are shown.) In

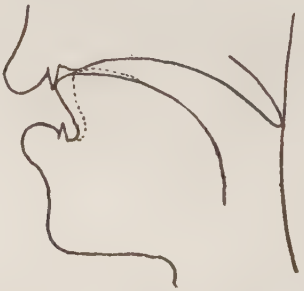


(*a*) Dental t̪. Fig. 19.[2] (*b*) Alveolar t̪.

[1] The term dental is here used in its widest sense, and includes both true dentals and alveolars.

[2] Reproduced by permission from the "Outline of English Phonetics," by D. Jones.

such languages as our own, and also in the case of most European languages, the difference between dental and alveolar is not significant, but from the point of view of the student of phonetics the difference is a matter which requires close attention. There are languages which have at least two significant varieties of what the average person is accustomed to regard as a dental sound, and those who are making a serious study of speech-sounds must learn to distinguish between dental, alveolar, and other varieties of the somewhat similarly produced sounds. Below is given a figure of the tongue positions for dental and alveolar sounds.



Dental sounds_____Alveolar sounds.....

Fig. 20.

There are, of course, many intermediate varieties, the character of which must be determined on the field of work. In many cases these position differences will be found negligeable from an acoustic point of view.

129. A class of tongue-tip consonants, which are as a rule very difficult for the average European, is that which is produced with the tip of the tongue somewhat curled back, so as to come in contact with

the highest part of the roof of the mouth, that is, somewhere about the junction of the hard and soft palates. It is a class of sound very common in the majority of the Indian tongues, and it is very important that the missionary should get the correct pronunciation of them. They are frequently significant, and mispronunciation may lead to serious misunderstanding. Indian grammarians class these consonants as **cerebrals.** The name for them in the terminology of phonetics is **retroflex** or **cacuminal.** The sounds to the untrained or to the non-native ear are very similar to the corresponding dentals. There are found retroflex t, d, n, l, r and ɻ. These retroflex varieties are indicated in Roman transliteration by means of a small dot placed under the symbol. Figure 21 shows the tongue position for t. This notation is for the

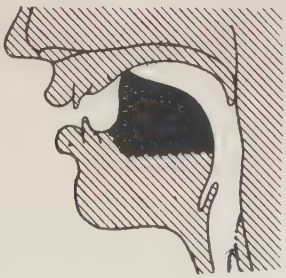
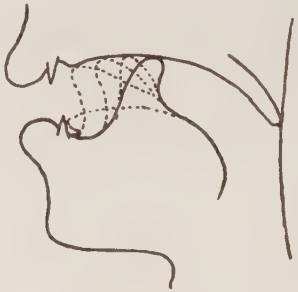


Fig. 21.

present used in the International Alphabet and appear as t, d, n, l, r and ɻ.[1] The position of the tip of the tongue required for the production of these consonants

[1] Some very ingenious new types have been devised by the Rev. J. Knowles.

frequently has some influence of the character of any vowel with which they may be associated.[1] To learn to pronounce the "cacuminals" it is necessary that the tip of the tongue should be well curled back, very much as for the Southern English fricative ɹ, but more so. Indeed it should be possible by means of a hand glass to see the whole of the lower side of the tongue. The tip must be pressed firmly against the highest part of the roof to form the obstruction and kept in this position for the greater part stop. It then glides rapidly along the hard palate till it reaches the gum-ridge, whence it falls as it were by its own weight on the floor of the mouth with a kind of flap. The figure given below illustrates the position.



First position _____. Succeeding positions.....

Fig. 22.

In preparation for practising the sounds themselves, the student should go through a series of tongue gymnastics indicated by the dotted lines in the figure, and not rest satisfied until he can produce a distinct "flop" as the tongue falls on the floor of the mouth. When success

[1] See § 138 on 'retroflexed vowels.'

in this has been attained, he will be ready to try to learn the sounds themselves. If he has a native teacher, he should insist on his not allowing incorrect sounds to be passed. This can be done by taking pairs of words in one of which the retroflexed, and in the other, the dental occurs, and asking the teacher what the meaning of each is, not letting him know, of course otherwise than by pronunciation, which is meant. Natives call the dentals and cacuminals "soft" and "hard" respectively.

130. Arabic possesses some dental, or perhaps more strictly alveolar, consonants known as "emphatics." They are produced with the body of the tongue somewhat in the same position as for English l̪. (See Fig. 3.) The tongue is somewhat tense, and the tip is pressed firmly against the palate. A glide of the ɯ̪ nature is generally heard after these consonants, which have also a somewhat modifying effect on the adjacent vowels: thus a̪ may become almost ɒ̪. The phonetic sign for the emphatics is ˕ placed under the normal symbol, e.g. t̪˕, d̪˕, s̪˕, etc. The difference between the usual and the emphatic forms of t̪˕, d̪˕, etc., is frequently significant, for instance, tiːn *fig*, tiːn *clay*; darb *road*, dɒrb *beating*; sæif *sworn*, sɒif *summer*. The sounds should be learnt from a native teacher or a trained phonetician; Indian and other non-native speakers of Arabic rarely pronounce these consonants correctly.[1]

[1] I am told that d̪˕ becomes d͡ð in Persian Arabic. In "high" Arabic z̪˕, being somewhat lisped, has the character of ð̪ˠ; in conversation it is a kind of dark z̪. The Druses of Lebanon pronounce z̪ as ð̪ with ɯ̪ glide.

The student may find it helpful in his attempts if he retracts somewhat the front vowels when in contact with the emphatics.

131. In some languages, notably Russian, consonants are produced with a simultaneous raising of the front of the tongue to something approaching the j position. This, which is known as **palatalisation,** raising gives a peculiar characteristic to the consonant. It is very marked in Russian, and suggests to the untrained ear the consonant followed by a j glide. It is sometimes significant, but whether that is the case or not, the missionary who comes in contact with flocks, whose language possesses these palatalised sounds, should make a point of acquiring them correctly. In phonetic script the palatalised consonants are indicated by a dot, placed over the symbol, suggestive of that of the letter i.[1]

132. Similarly there are consonants, otherwise normal, in the production of which the back of the tongue is raised to the u position. These are known as **velarised** sounds. They do not, so far as I know, play the important role that the palatalised consonants do. Still the student of phonetics should be prepared to recognise and to reproduce them. If it be found necessary to indicate velarisation in a script it may be done by placing a small ^{u} over the usual symbol.[2]

133. There are some consonants, the character of which is considerably altered if they are uttered with

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[1] The student must not confuse ṅ and l̇, &c., which are palatalised consonants, with ɲ and ʎ, which are true palatals.

[2] Confusion should not be made between velarised and velar consonants. n^{u} is quite different from ŋ. The Arabic emphatics are velarised consonants.

marked rounding of the lips. Such consonants are called **labialised.** Among these are labialised θ̲ and ð̲. Two consonants of this type are found in the Bantu language. For these the phonetic alphabet uses σ̲ and ϱ̲ respectively.

CHAPTER XVIII.

INVERSE SOUNDS, CLICKS, WHISPERED SOUNDS AND CONSONANTS WITH GLOTTAL CLOSURE.

134. In the case of all speech-sounds hitherto mentioned the breath has been understood to pass from the lungs outwards through the mouth, or the nose, or both together. There are cases, however, where the reverse is the case and the breath is inspired. This is not uncommon in most languages, when an exclamation of pain or pleasure is uttered. If we prick ourselves with a pin we frequently inspire with the lips in the f̲ position; a sense of pleasure is sometimes expressed by breathing in with the l̲ position. This class of sound, which is usually unaccompanied by voice, owing to the physical difficulty of setting the vocal chords in vibration whilst inspiring, is known as **inverse**, and may be marked in phonetic script by placing ˃̲ under the symbol used for the corresponding normal sound. The English word *yes*, pronounced in this way, would be represented ç̲e̲s̲ or ç̲e̲s̲: in the second pronunciation s̲ is normally expired. In uttering these

sounds the glottis is kept open so that the breath passes into the lungs.

135. In another class of inverse sound, which contains consonants only, the glottis is closed and the breath can therefore pass only from one part of the mouth (or nose) to some place above the vocal chords. Consonants of this type are known as **clicks**, and are significant speech-sounds in many African languages. They may be represented by the sign $\underline{\leq}$[1] placed over the letter, which stands for the sound normally produced by the same organic position. The exclamation written *tut-tut* is $\underline{\overset{<}{t}}\ \underline{\overset{<}{t}}$. The name of the late king of Zululand *Cetewayo* would be written phonetically $\underline{\overset{<}{t}\text{ɛtjuaːjo}}$. The Kaffir language seems to have three clicks $\underline{\overset{<}{t}}$, $\underline{\overset{<<}{t}\text{l}}$, and $\underline{\overset{<}{t}}$, and there are said to be as many as seven found amongst the Bosjemans.[2] Some of the clicks are made by a lateral release, as in the case of the sound made to encourage a horse. This is $\underline{\overset{<}{k}}$ released on one side or other of the mouth, and it differs entirely in effect from the sound produced by a complete separation of the back of the tongue from the velum. If it be found necessary to distinguish at any time between a lateral and a fully released click, the former may be indicated by placing $\underline{\dagger}$ after the symbols.

136. In most European languages the vocal chords vibrate in the production of all voiced sounds, and it is

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1 This symbol is not very satisfactory. I hope a better will be devised before long.

2 In some African languages the women use a larger number of clicks than the men. The study of Anthropology suggests a reason for this.

only when we whisper that this vibration is replaced by something else. This "something" else is a modification of the breath, due to narrowing the vocal chords in such a way as to prevent free egress of the air without setting them in musical vibration.[1] In some languages whispered sounds are frequently intermingled with others. The phonetic symbol for a whispered sound is ̥ placed under the sign for the normal sound. Thus we should write word for a *cow* in one of the dialects of Madagascar by aumb̥i̥[2]. These whispered sounds are also found in some of the South African and North American languages. Whispered, and even breathed, vowels may be heard in Portuguese, and I have not infrequently heard w̥i̥, mɛrs̥i̥ and ʌi̥, mɛrsi̥ in French for wi *oui*, mɛrsi *merci*.

137. In some languages, consonants may be found in the emission of which the glottis is completely closed, the resultant sound being produced solely by the emission of breath stored up, as it were, between the larynx and the point of obstruction. Such consonants are found in several languages, and are known as consonants produced with **simultaneous glottal closure.** They are indicated by the symbol ' placed after the consonant symbol. They may be described as "clicks passed outward instead of inward."

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[1] Whispered must not be confused with breathed sounds. The true nature of whisper is not yet, I believe, exactly determined. The student will find that in whispering it is possible, though not easy, to distinguish between *pit* and *bid*. If the sounds are emitted with breath only the consonants will be practically alike and the vowel sound almost imperceptible.

[2] This example is quoted from Passy's "Petite phonétique comparée."

Anyone who has learned to make the clicks should have little difficulty in pronouncing such syllables as p'a, t'a, k'a, etc. These consonants are sometimes peculiarly resonant. The result should, if possible, be tested and checked by a trained phonetician.[1]

CHAPTER XIX.

RETROFLEXED AND MIXED VOWELS.

138. It has been remarked in § 129 that the retroflex consonants sometimes have a modifying effect on the vowels which may be associated with them. This modification is in the nature of assimilation, due to the tip of the tongue anticipating the retroflex position. Hence the vowel is pronounced with the tongue-tip slightly drawn back and raised towards the palate. This class of vowel is by no means uncommon in the West of England, as well as in Lancashire, when a word has in the usual spelling a following *r*. A very good example of the sound may be heard in the Cornishman's pronunciation of the word *bristle*, which he pronounces bɹ̝sl, the symbol for the inverted tongue position being ˕. A native of Lancashire distinguishes between such pairs or words as *lord*

[1] An illuminating article on the sounds treated of in this chapter is to be found in the "Maître Phonétique" for November—December, 1907, where the subject is fairly fully investigated by my colleague, D. Jones.

lɔːd and *laud* lɔːd by means of this class of vowel, phonetically named **inverted** or **retroflexed,** even if he does not pronounce the ɹ of the word. It will be seen from the last example that an inverted vowel may be significant.

139. The front and back vowels are sometimes considerably modified in their acoustic effect by the retraction or advancement of the articulating part of the tongue, together with a simultaneous retraction or advancement of the whole body of that organ towards the mixed position. This class of vowel is called, in the language of phonetics, **mixed.** When no special letter is provided for these vowels the phonetic symbol used to indicate these phenomena is ¨ placed over the vowel letter. A typical instance of the advanced ü is found in the London (not necessarily Cockney) pronunciation of the words *good* güd and *spoon* spüːn. The sound ï may be heard in Welsh in *Llandydno* landïdno. In some languages, amongst them Portuguese, an obscure vowel, somewhat resembling ə, is found, as well as the usual ə. Such a vowel may, when necessary to distinguish the two, as is the case in Portuguese, be represented by ɐ if it has a lower tongue position than ə. In these modifications of the vowels there is always a tendency to the assumption of the ə position. Some very good examples of this type of vowel may be found in the second of the publisher's Phonetic Series, "Short English Poems for Repetition," by C. M. Rice.

140. It is impossible, in such an elementary work as this, to treat of all the other shades of sounds which may be come across in the languages of the world, the definite types of which run into three figures. The

student who has carefully studied what has been written, and has trained his tongue and other organs of speech by means of the exercises, at the same time keeping his ears open to the pronunciation of those with whom he comes in contact, should not find any great difficulty in analysing and reproducing varieties of sound he may come across.

CHAPTER XX.

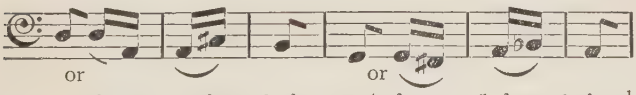
SIGNIFICANT WORD INTONATION.

141. In Chapter XII. something has already been said about intonation, and it has been shown how variations of tone may modify the meaning of a sentence, or even of a word, which stands as a sentence-substitute. Such intonation may be called **sentence intonation.** It may be asserted that this kind of intonation is normal in European languages, with one or two exceptions,[1] as well as in the majority of synthetic and analytic tongues. But when monosyllabic (and possibly also certain agglutinative) languages are in question, it will be found that intonation, which is called **word intonation,** plays a most important

[1] In Norwegian, there are tones called compound, which the Danes, whose written language is practically identical with Norwegian, seem to replace by ?.

part, not in modifying the meaning of sentences, but in completely changing the meaning of words. This is especially the case with many of the Chinese dialects. In such languages as these it may be said that the tone is inherent in the *word*, and that shades of meaning in a sentence cannot be expressed by variations of the tone, since any variation of tone indicates a corresponding change of the meaning of the word to which it is applied.

142. An excellent illustration of tones, as applied to words, is to be found in the Cantonese dialect, in which there are six different tones, any one of which may be used with any word, so giving it six (amongst many) different meanings. Below is given an illustration from "A Cantonese Phonetic Reader," by D. Jones and Kwing Tong Woo. The word *fan* fan is pronounced with the six intonations represented in the musical notation given below. The reader should understand that the word is not *sung*, and that musical glides (in musical terminology, *portamenti*) exist between the first and the last note of the interval.



1. fan. 2. fan. 3. fan. 4. fan. 5. fan. 6. fan.[1]

[1] I am greatly indebted to Messrs. D. Jones and Kwing Tong Woo for permission to use these illustrations. The value of the musical and phonetic notation was proved to me in 1913, when two Chinese Missionaries congratulated me on my pronunciation of the Cantonese dialect, which I had never heard spoken, and of which I understood no word except the one cited above. "A Cantonese Phonetic Reader" (University of London Press) should be in the hands of every Missionary whose field is in China.

The various meanings according to the tunes are as follows:—

1st tone *to divide,*
2nd tone *powder,*
3rd tone *sleep,*
4th tone *burn,*
5th tone *courageous,*
6th tone *duty.*

The musical notation given in the above example is not, of course, representative of "absolute" pitch. Individual speakers may start on a higher or a lower note, but the intervals are fixed ones. Thus the first tone is, from a musical point of view, a descent of five semitones, the second a rise of four, the third a fall from the second of one, and so on.[1] In studying intonation, whether of words or sentences, it is sometimes helpful to hum the word or sentence on the sound m. The mind is thus taken away from pronunciation and meaning, and is better able to devote its attention to the musical value. The tones of fan would then be practised.

or or

m.....[2]

[1] Many students may object that such musical indication of tone is useless to them, as they know nothing of music and they have no ear for it. I am certain that those who say that they have no musical ear deceive themselves. In the course of several years' work I have come across many students, who began with the idea that it was impossible for them to appreciate differences in pitch, but I have never yet found one whom I failed to convince that he was mistaken.

[2] Intonation can be more easily noted and musically recorded if articulation is abandoned and a nasal hum substituted. I have heard Professor Viëtor do this beautifully.

143. Significant word-tone is found not only in Chinese, but also in Burmese, Punjabi, and not a few South and West African languages, including Kaffir, Sechuana[1], Ibo, and Hausa.

CHAPTER XXI.

PRACTICAL HINTS.

144. I now give some practical hints to the student who wishes to prepare himself by the aid of phonetics for the study of a new language:

1. Learn how the sounds of the mother tongue are produced.

2. Note how your own pronunciation differs from that of the people with whom you come in contact, and endeavour to find the causes of such difference.

3. Try how rounding and unrounding of the lips affect a sound. In the case of most of the vowel sounds you will find the difference remarkable. In the majority of the consonant sounds the difference will be inappreciable, with the exception perhaps of the dental fricatives ð and θ. (See § 133.)

4. Practice transition from one sound to another, and note if there are any intermediate sounds, which are, for convenience, called glides.

5. Note the effect of retraction or advancement of the highest articulating part of the tongue. Vowel modification will be particularly noticeable.

[1] See "A Sechuana Reader," by D. Jones and S. T. Plaatje, University of London Press, 1916

6. Compare the acoustic effect and the causes of the differences between the English so-called long vowels (generally diphthongised) and the true long vowels of French or German.

7. If you have a native teacher insist on his correcting defective pronunciation. To this end you should intentionally make mispronunciations. If no correction is made, your teacher is either ignorant of sound values, or careless, or over-polite.

8. Don't think that you know all there is to be learnt about phonetics because you have read this or any other text-book, or attended a course of lectures. The field, even in any one language, is by no means exhausted.

CHAPTER XXII.

THE TRANSCRIPTION OF LANGUAGES HITHERTO NOT WRITTEN.

145. Languages still exist which have not been reduced to writing, and it is necessary for the missionary, and interesting to the linguistic world, to have a permanent record of such tongues. Hitherto a great deal of work of this kind has been undertaken by persons who took as their basis the sound-values of the alphabet of their mother-tongue, however imperfect and inconsistent that alphabet may have been in its means of representing sounds. Hence transcriptions which may

be fairly faithful guides to those of the same nationality as the transcribers, are utterly misleading to persons of another nationality. By taking the alphabet used in this book as the basis, a large amount of confusion can be avoided, and one transcription will convey the same meaning (approximately at least) to all.[1]

146. I venture to borrow, almost verbatim, from "The Principles of the International Phonetic Association," the principles for the transcription of unrecorded languages, suggested by members whose experience has produced and developed the phonetic alphabet.

1st Principle.—In settling for any language the form of transcription best suited for *practical*, as distinguished from *scientific* purposes, the language should be regarded by itself without reference to other languages.

2nd Principle.—It is necessary to ascertain what, and how many, are the distinctive sounds of the language i.e. those which if confused would conceivably alter the meanings of words: e.g. pairs of vowels like i and iː, u and uː. Shades of sound which are occasioned by proximity to other sounds, absence of stress and the like, very often do not require special symbols.[2]

3rd Principle.—Typical sounds should be represented

1 See Appendix "Cardinal Vowels."

2 In French *j'aimai* ʒeme is differentiated in meaning from *j'aimais* ʒemɛ by the pronunciation of the final vowel; a different symbol must, therefore, be used for the final vowels. English possesses only an aspirated, French only an unaspirated p. We may, therefore, write the same symbol for these two varieties, with the convention that in transcribing the former language p indicates a following aspiration, whilst in writing the latter it is understood to mean an unaspirated consonant. In the case of such languages as Urdu and Chinese it is necessary to use different symbols for the two sounds.

(as far as possible) by single letters without diacritical marks. Diacritics should (as far as possible) be resorted to only for the purpose of representing shades or varieties of the typical sounds.

4th Principle.—The vowel letters a, e, i, o, u should be taken to have their Italian values, i.e. roughly those of the English words *shah*, *end*, *east*, *boat*, *pool*. (See §§ 21 and 44.)

5th Principle.—If the language does not contain more than one variety of the sounds *e*, *i*, *o*, *u*, these symbols should be used for the varieties occurring. If the language contains one variety of the sound of the type a, not being a distinctly back variety, the symbol a should be used. If the language contains a sound of the type of the French *u* it should be represented by y; if it contains one sound of the type of the French *eu*, not being a distinctly "close" type, it should be represented by œ.

6th Principle.—If the language contains two distinctive varieties of the sounds of e, of œ, of o, of i, or of u, the ones with the higher tongue position should be represented by e, ø, o, i and u, whilst those with the lower tongue position should be represented by ɛ, œ, ɔ, ɪ and ʊ respectively. If the language contains two distinct varieties of a, that with the tongue further back should be represented by ɑ, and the one with the tongue farther forward by a.

7th Principle.—If the language contains sounds which to an untrained ear sound like the groups kj (as in *cube* kju:b), gj (as in the native pronunciation of the word *Magyar*, nj (as in *onion*, or the French word *rognon*, lj (as in *million*, or the Italian *seraglio*), but which are

felt by the native ear to be simple sounds rather than compounds, the appropriate sympols are probably c̲, ɟ̲, n̲, ʎ̲, respectively.

8th Principle.—When vowels of similar though distinct quality are distinguished merely by the fact that one is longer than the other in similar circumstances, a simplification of the transcription may sometimes be effected by using only one symbol, modified or not by the length mark. Thus in English we may write fi̲t and fi:t̲ for *fit* and *feet* respectively, instead of fi̲t and fi:t̲, with the convention that the long vowel is tense while the short one is lax. If each variety is found either long, or short, the diacritics ˊ and ˋ may be used.

147. It may be objected that the principles of transcription suggested above are not suitable for graphic representation of the language in question in its dialectic varieties. From a scientific point of view this objection is quite valid, but for practical purposes the adoption of a few conventions will allow the use of a uniform script for the whole area in which the language is spoken. Thus we might find that in a district, which we will call A, the written letter *r* indicates the rolled variety of that sound. In district B the rolled variety is replaced by the fricative; in C the quality of a preceding vowel is modified by the upturning of the tip of the tongue, as in the West Country; whereas in D the symbol merely means that the vowel sound preceding *r* is either lengthened or followed by an ə̲ sound. Similarly the sign o̲ may stand for the pure vowel sound in one dialect and for ou̲ in another. An excellent example of the

adaptability of the script may be found in the leading article by Daniel Jones in "Le Maître Phonétique" for September-October, 1913.[1]

148. Finally, I should like to insist upon the principle "festina lente." Those who find it necessary to romanise a hitherto unwritten language should first find out the particular dialect which may be taken as the "standard." Generally speaking this will be found to be that of the court and administration (when such exist), and this should form the basis of the pronunciation to be graphically recorded. Whatever script be adopted, there are four main objects to keep in view. 1st, it should be easily read; 2nd, it should be easily written; 3rd, it should be easily printed (with but slight modification of existing types); and finally, it should be easily readable, by the adoption of conventions, by those who use a "provincial" pronunciation.

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[1] See also the introduction to my "English Humour in Phonetic Transcript." (Heffer, Cambridge.)

APPENDIX.

THE CARDINAL VOWELS.

In the majority of books on phonetics or in phonetic script "key-words" are given to illustrate the sound-values of the symbols used. These may serve fairly well when the book deals with one language only. But key-words must always be more or less misleading, for few people pronounce all the sounds of their mother tongues in exactly the same way as their neighbours do; even when they belong to the same speech region and the same class of society, to the trained ear their pronunciations are markedly different. Take for example the final vowel of the word *villa*, given on page 13 as the key-word for the pronunciation of the neutral vowel written phonetically ə. Now the symbol ə accurately represents my own pronunciation of this vowel, but I have found in the course of teaching that educated speakers of Southern English pronounced the word in at least six other ways, among which the most marked varieties are vilɑ, vilä, vila, vilä, vilʌ and vilɐ. Similarly varying values are attached by different speakers to all the other vowel symbols. Thus to say that such and such a transcription represents the pronunciation of a certain section of speakers is certainly an inaccurate and, possibly, a misleading statement.

For purely scientific purposes, at least, it has been found advisable to establish and determine a series of

vowel sounds, which may be used as a "common measure" of all other vowel sounds. As the result of careful and prolonged research (unfortunately not completed at the time of writing) by Mr. Daniel Jones and his colleagues at University College, London, a series of twelve vowels with marked timbre and well-defined tongue and lip positions has been fixed upon. These vowels are known as the **cardinal vowels.** So far as I know no single language contains all of them, but they are doubtless to be found somewhere in human speech. They must, therefore, not be regarded as English, French, Italian or other national vowels, but merely as abstract sounds.

The principles on which they have been determined are as follows. The front of the tongue is raised as near to the hard palate as it is possible to do without producing audible friction, i.e. a consonantal character. This position, accompanied of course by musical vibration of the vocal chords, produces cardinal vowel i. The front of the tongue is next depressed to the lowest position in which it is possible for it to be and yet be higher than the back of the tongue; this produces cardinal vowel a. The two points i and a joined give the line of tongue positions for the cardinal front vowels. Proceeding similarly with the back of the tongue, we get the positions of cardinal vowels u and ɑ and the line uɑ gives the tongue position of the back vowels. We now have the four angular points of a trapezium, the base of which marks the lowest, and the sub-tending side the highest lines of tongue activity for vowel sounds. If the sides ia and uɑ are each trisected we get, on the front line, the tongue positions of car-

dinal e and ɛ, and, on the back line, of cardinal o and ɔ[1]. The lip positions are understood to be in marked sympathy with the tongue positions. Of the four remaining cardinal vowels three belong to the front line: y is i with lips rounded as for u, ø is e with the lips as for o and œ is ɛ with lips as for ɔ. The last of the cardinal vowels lies on the back line and is written ɯ: it is u with the lips spread as for i. These vowels, in the production of which the middle of the tongue is the active agent, *i.e.*, the highest part, are known as mixed vowels, their position lying within the triangle α β γ, shown in the figure below.

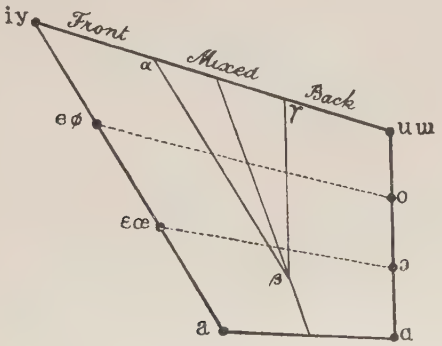

Fig. 23.

It would be an advantage if three cardinal mixed vowels were established, but up to the present this has unfortunately not been done. Thus our cardinal vowels, which may be conveniently known by numbers,

[1] Exact pictures of the tongue positions of the cardinal vowels have not yet been secured; therefore, for the present we have to be content with the equi-distant divisions.

especially when referring to them in oral teaching, are:—

1	2	3	4	5	6	7	8	9	10	11	12
i	e	ɛ	a	ɑ	ɔ	o	u	y	ø	œ	ɯ

These vowels should be learned from, and practised with, a trained phonetician, but where such help is not procurable, the student should get from the Gramophone Company record no. B. 804, price 3/6, a double-sided record giving the cardinal vowels.

When the investigator and recorder of vowel sounds has learned to produce accurately and to recognise without fail the twelve cardinal vowels, he has definite measures to which he can refer the lip and tongue positions of any other vowels with which he may come in contact. Not only that, but he will be able to convey, even in writing, by means of diacritics or mathematical ratios, with a minimum of error, his own impressions to other phoneticians similarly equipped. Thus his transcription will fairly accurately represent any given pronunciation, and the "confusion of tongues," arising from the use of national key-words will, it is to be hoped, be for ever banished.

Investigations are being made to determine the absolute musical pitch of the cardinal vowels, and when this is done the result will be invaluable in fixing for all time their acoustic value.

EXERCISES.

1.

Write the following words in phonetic script:—*hat*, *hart*, *height*, *tarn*, *tan*, *Tyne*, *like*, *lark*, *lack*, *hope*, *mayor*, *shape*; by means of a hand glass analyse and note the differences in tongue and lip position.

2.

Take the simple vowel sounds in Exercise 1 and practise them with different lengths, i.e. making the normally short vowels long and the long ones short. In the case of those vowels which are the first elements of diphthongs separate them from the second element and pronounce them both long and short, without any alteration of quality.

3.

Write phonetically the words:—*mare*, *merry*, *fair*, *ferry*, *share*, *sherry*, *pair*, *perry*. Note your own pronunciation of these words, and see (1) if you make any difference in the vowel values of the pairs of words; (2) if you pronounce any kind of *r* sound; and (3) if you do, what is the variety in your natural speech, and if the variety is changed by the circumstances in which the sound occurs. For instance, your *r* may be sometimes rolled, sometimes fricative.

4.

Compare the i̲ values in the words:—*pit*, *peat*, *sit*, *seat*, *hit*, *heat*, *fit*, *feat*, *knit*, *neat*. Ascertain the influence of quantity upon quality, and *vice versa*. Practice the normally short vowels long and the

normally long ones short. Note whether your own pronunciation has any tendency to diphthongise the long variety and to substitute ij for iː. If it does, aim at producing the sound without any variation of quality.

5.

Note if l̩ has any modifying influence on a preceding i̯ or iː. This may be done by comparing such words as *need* and *kneel*, *heat* and *heel*, *fit* and *fill*, *writ* and *rill*. If you find that there is modification, resulting in such pronunciations as fijl or fiːəl, hijl or hiːəl, etc., try to get a pure long iː in these words and to give the value ij or iːə in words where there is no following l̩.

6.

Perform similar exercises with the back vowels as found in the words *Poll*, *Paul* and *port*; *not*, *naught*, *note*; *pull*, *pool*, *foot*, *food*. You may find a tendency to diphthongise the long vowels. If you do so, aim at pronouncing them pure; if not, practise them with diphthongisation, e.g. ɔɔː[1], uw.

7.

Practise changing the position of the lips in the production of a vowel which has a definite tongue position, and note the effect on the resulting sound. For instance, utter the vowels a, æ, ɛ, e, i, iː with the lips in the normal position, and then, without moving the tongue, give the lips different degrees of rounding. Take also the back vowels ɔ, ɔː, o, u and uː and note the result of pronouncing them with the

[1] ɔ in all the exercises has the value of ɔ̯ in the English *hot* hɔt unless the contrary is definitely stated.

tongue position unaltered, but with the lips as for the front vowels.

8.

Pronounce the words *mother*, *brother*, *Puttock*, *Lubbock*, *borough*, *mustard*, *butter*, *duffer*. What difference do you notice in the vowel values of the two syllables of these words? Try to analyse the tongue position of the vowels. Notice also if the vowel of the second syllable is the same in all the words. Practise the words with the vowels reversed, thus mə̆ðʌ, brə̆ðʌ, pə̆tʌk, etc.

9.

Practise the voiced and unvoiced fricative consonants in pairs without intermission of the breath stream:— zszszs....., ðθðθðθ....., ʒʃʒʃʒʃ.....etc. Reverse the order of the consonants, beginning with the unvoiced.

10.

Do the "time" exercises mentioned in § 86 with the voiced fricatives, paying particular attention to the simultaneous vibration of the vocal chords both initially and finally.

11.

Go through similar exercises with l and the nasals m, n and ŋ.

Thus l..., m..., n..., ŋ.
1, 2, 3... 1, 2, 3... 1, 2, 3... 1, 2, 3...

Also practice llll..., mmmm..., nnnn..., ŋŋŋŋ.

12.

Take the plosives in voiced and unvoiced pairs. Here a "time" exercise will be necessary. Make the

closure, hold it for a definite number of beats, and then set the vocal chords in vibration for the same number of beats. Exercises are indicated as follows:

$$\underset{1,2,3}{\underline{t}} \qquad \underset{1,2,3}{\underline{d.}}$$

These cannot be continued as long as the fricatives. These exercises may be practised with the card and the glass, as shown in the note to § 23, as a guard against the opening of the nasal passages.

13.

Do "time" exercises with the voiced plosives alone. For this purpose each sound should be studied and practised in five or six beats. One or two should precede the closure with the simultaneous vibration of the vocal chords, two or three beats should represent the time during which the stop accompanied by the voice is maintained, and at a given moment 5 or 6, the release should be made at the very instant the chords cease to vibrate. As a variant of this exercise the student may begin with the vowel ə̲ before forming the obstruction, and, after the release, continue with the same sound, which will, of course, be maintained during the stop. By a gradual reduction of the preceding and succeeding vowel a completely voiced plosive consonant should be acquired. A suggestive exercise is

(*a*) 1234567 (*b*) 1234 (*c*) 123
ə̲.d̲..ə̲. ə̲d̲.ə̲ .d̲.

All the other plosives may be practised in the same way.

14.

Practise normal sounds in abnormal surroundings.

Take a series of words ending with ŋ and reverse the order of the sounds. Thus, instead of ləŋ, say ŋəl; for θiŋk, pronounce kŋiθ. If you can pronounce the Scotch *loch* lɔx, try to produce xɔl. Other exercises will suggest themselves.

15.

Pronounce ststs..., θtθtθ..., sθsθ..., sθʃsθʃsθʃ... sθtsθtsθt..., sʃθtsʃθtsʃθt..., and corresponding voiced combinations.

16.

Make unusual combinations of English sounds such as tp, bd, sr, ln, md, dm, vk, etc., taking care to give each sound its full value and avoiding any assimilation.

17.

Practise any "jaw-breakers" you may have come across. Such may be found in "She sells sea shells on the sea shore," "Skittish Scotch sketch." Make a point of enunciating distinctly each of any combinations of sounds which are produced by very similar yet different articulation. A good example of such combinations is to be found in the words *widths* widθs, months mʌnθs.

18.

If you find a difficulty in producing r, practise the sound preceded by θ, drawing the tip of the tongue sharply back and towards the hard palate after the release of θ. Keeping this suggestion in mind, pronounce the words *three* θriː, *through* θruː, *thrash* θræʃ, *throng* θrɔŋ, *thread* θred. It is probable that in one or other of the words there will be felt a vibration of the tip of the tongue. Go on practising;

unless you are physically abnormal you will find that you are capable of producing a well rolled sound.

19.

Make syllables containing different types of *r* sounds, e.g. ɹar, ʁar, riɹ, etc.

20.

Practise bmbmbm…, dndndn…, gŋgŋgŋ…, pmpmpm…, tntntn…, kŋkŋkŋ…, bmbmbm…, dndndn…, gŋgŋgŋ…, pmpmpm…, tntntn…, kŋkŋkŋ…, allowing the release of the plosive to take place through the nasal passages. This exercise is very useful for gaining control of the action of the velum.

21.

Do a similar exercise to the above, combining the labial plosives with the nasal and velar nasals, and so on: e.g. bn…, bŋ…, etc., taking great care not to assimilate.

22.

Pronounce pɑ, pa, pæ, pɛ, pe, pi, piː, pɔ, pɔː, po, pu, puː; tɑ, ta, tæ, etc.; kɑ, ka, kæ, etc., with the lips, anticipating the vowel position whilst uttering the consonant. A hand-glass should be used as a control.

23.

Repeat the previous exercise with the remaining unvoiced English consonants.

24.

Do a similar exercise to No. 24 and No. 25 with the voiced consonants.

25.

Practice phɑ, pha, phæ, etc.; thɑ, tha, thæ, etc.; khɑ, kha, khæ, etc. (the normal English aspirated consonants) and pɑ, pa, pæ, etc., tɑ, ta, tæ, kɑ, ka, kæ,

etc. (without aspiration). A lighted match held near the mouth will serve as a slight check on the degree of aspiration. If this is strong the flame will either be blown out or will flicker violently. If aspiration is absent the flame will remain fairly steady.[1]

26.

Try the voiced plosives with aspiration:—bʰɑ, bʰæ, etc. Practise also bhɑ, bhæ with a true h.

27.

Pronounce ɑkt, akt, ækt, etc., without audible release for the plosive k: also say ɑgd, agd, ægd, etc., in a similar way. Then try to let the release of the first consonant be perceptible to the ear, e.g. ɑkʰt, ɑgᵊd. Make similar exercises with other pairs of plosives.

28.

Practice double consonants ɑttɑ, attɑ; ɑkkɑ, ɛkkɑ; ɑbpi, ɔpbɑ, edti, utdi, etc.

29.

Write a list of all English words you can think of having both strong and weak forms. Note the circumstances which lead to weakness.

30.

Practise ɑʎɑ, aʎa, æʎæ, etc. Substitute other vowels before and after ʎ, e.g. iʎu, əʎɔ.

31.

Practise ɑɲɑ, aɲa, æɲæ, etc., substituting later other vowels as in Ex. 30.

32.

Practice the clear French l: say the words sɑ:bl, tabl, being careful not to give l a syllabic character.

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[1] This is not a scientific test, but it is practical.

33.

Study l̥ and practice the sounds l̥ɑ, l̥a, l̥æ, etc., ɑl̥ɑ, al̥a, etc. Substitute other vowel sounds.

34.

Roll a good r̥ and practise the syllables r̥ɑ, r̥a, r̥æ, etc., ɑr̥ɑ, ar̥a, ær̥æ. Substitute other vowels.

NOTE.—If you already possess a rolled r̥ do this exercise with the fricative ɹ̥.

35.

Repeat Exercise 34, substituting ʁ̥ for r̥.

36.

Make the bilabial fricative ɸ̥. Pronounce the syllables ɸɑ, ɸa, ɸæ, etc. Add voice to this consonant and say v̥. Then practise syllables v̥ɑ, v̥a, v̥æ, etc. Also put vowel sounds before the consonant. Care must be taken to keep the tongue-back low; otherwise a variety of w̥ will be the result.

37.

Practise iç̥, æç̥, eç̥, etc. (front vowels only). For suggestions as to how to acquire this sound see § 97. Reverse the sounds, beginning with ç̥; also place front vowels before and after, thus iç̥æ, ɛç̥e, etc.

38.

Do Exercise 37 with back vowels, e.g. ɑç̥, ɔç̥, uç̥, etc. These combinations may not occur in spoken language, but they are valuable tongue exercises.

39.

Practise ɑx̥, ɔx̥, ox̥, etc. (back vowels only). Reverse the sounds beginning with x̥; also place back vowels before and after.

40.

Do Exercise 39 with front vowels.

41.

Pronounce such combinations as ɔːgə, ɑgu, gəgə. Be sure that g is well voiced. It is a difficult sound to produce with voice.

42.

Produce as many shades of English vowel sounds as you can: ɑɾ, ɑɹ, ɑɪ, etc. Practise these till you are sure that you can identify three varieties of each.

43.

Take special care in pronouncing the close and half-close foreign vowels i, e, o, u, making use of plenty of lip activity.

44.

Compare the vowels in the French and English pairs of words *note* nət, *not* nɒt, *hotte* (h)ɔt, *hot* hɒt, *chope* ʃɔp, *shop* ʃɒp, *Paul* pɔl, *Poll* pɒl. The French vowel ɔ should have a character somewhat between those of ʌ and ɒ: it has also decided lip-rounding.

45.

Pronounce the front vowels ɛ, e, i with the lip-rounding of ɔ, o and u. This will produce œ, ø and y. Practise these front-rounded vowels with consonants pœ, pø, py, tœ, tø, ty, etc., taking care during the formation of the consonant to anticipate the lip-rounding of the vowel. This will prevent such objectionable mispronunciations as piy, teø, etc.

46.

Try all the vowels you can produce with varying

degrees of lip-rounding and lip-spreading, and note the results.

47.

Nasalise all the English vowels, practising at first in pairs, thus, aãaã..., uũuũ, etc.

48.

Try to produce the palatals c̠ and ɟ̠ before and after front vowels. It is possible that you already possess this sound in the words *kind* caind and *gift* ɟift.

49.

Practise q̠ and ɢ̠ before the sound ɑ̠. Let them sound like very "dark" k̠ and g̠ respectively. Then practise q̠ with front vowels. This is very difficult, but the combination occurs in some languages. Try the qɑqɛqi, allowing no glide to be heard between q̠ and a front vowel.

50.

Exercise yourself in the glottal stop ʔ̠. You probably use it initially when you utter a surprised *eh!* ʔei. When sure that you have the sound practise it in different positions, e.g. əʔɑː, bʌʔl, bʌlʔ, pɑʔ, mɑn͡ʔn.

51.

Try to emit initial vowels without ʔ̠, letting them "glide" out as it were. It is best to take a series, such as ɑɑɑɑ, making four distinct syllables, without cutting off the breath by closing the glottis. Be sure the first ɑ̠ has no ʔ̠.

52.

Turn y̠ into a consonant ɥ̠ by producing audible friction, and pronounce the combinations pɥi, tɥi, tɥe, tɥɑ, etc. Be sure not to substitute w̠ for ɥ̠.

53.

Practise ʜ and ʁ. Combine them with back vowels: e.g. ʜɑ, ʁo, ʜu, etc.

54.

Try to acquire ɦ, using the words suggested in § 126.

55.

Practise ɒ in the way suggested in § 127. Combine it with vowels, e.g. ɒɑ, ɑɒ, etc. Pronounce нɑ:, не, etc., with strongly whispered н. Then try ɑнɑ, ене, etc.

56.

Make syllables with the English so-called dentals and with the French true dentals, e.g. *ta*, *te*, *ti*, *to*, *tu*, *na*, *ne*, *la*, *le*, etc. Compare the acoustic results.

57.

Practise the retroflex consonant positions, aiming at the acquisition of the "flop." When this is acquired pronounce the consonants themselves with the vowel ɑ, thus:—ʈɑ, ɖɑ, ɳɑ, ɭɑ, ɑʈɑ, ɑɖɑ, ɑɳɑ, etc. Next substitute other vowels. Practise these sounds also with aspiration ʈʰɑ, ɖʰɑ, etc. Try also ʈɑ, ɖɑ, ʐɑ, etc.

58.

Make as many inverse sounds as you can, and try combinations of two or three, e.g. tʃ͡, pf͡, mt͡, θst͡, etc.

59.

Practise the clicks till you can produce them clearly and with considerable resonance. Then combine them with vowels, which should follow immediately and without glide: e.g. ǂɑ, ǂi, ǁɑ, ǁu, ǂi, ǂɛ, etc.

Try clicks with all possible tongue position and with lateral release kǂɑ, tǂi, cǂɛ.

60.

Whisper the words *bid*, *dog*, *mead*. Then speak the first consonant with voice, whispering the other sounds. Be sure they are whispered, not merely breathed. Then practice doudou, mælis, greidid, dɔgberi.

61.

Close the glottis as for the glottal stop ʔ and put the lips in the position for p.. Try to pronounce the consonant without opening the glottis. This will produce p'. Do the same exercise with the other unvoiced plosives t and k. Then practise p'ɑ, t'ɑ, k'ɑ, p'u, t'u, k'u, etc. This exercise may be extended to some of the fricatives.

62.

Go through the vowel sounds as you normally pronounce them and then retract the tongue for the front vowels, noting the result. Do the same with the back vowels, but advancing instead of retracting. Pronounce fït, güd, hëd, fü:d, and other similar monosyllables with tongue in the mixed position.

63.

Try unrounding u in various degrees. The result will be some variety of ɯ. Practise gɯ, dɯ, bɯ, ʒɯ, rɯ, ʀɯ, qɯ, etc.

64.

Make short sentences, speaking them with natural intonation. Repeat the same sentence several times till the intonation is fixed in your mind. Then hum it on m and try to make an intonation curve.

65.

Learn the six tones of Cantonese as a tune. Practice the word fan with its proper tones.

66.

Get some musical person to dictate words such as hai, jam, ŋɔk, lœŋ, and other monosyllables on the six tones and try to take down the words and note the tones. You need not write the musical notation; numbers will do, or the marks ˋ, ˊ, ˉ, ˏ, ˎ, ˍ, may be placed in front of the word.

67.

Make up imaginary Chinese sentences, beginning with two words, e.g. ˋmiŋ-san. Get these dictated and put them down in writing. By degrees, lengthen the sentences. This exercise is a valuable ear training.

68.

Have a short piece of English dictated by two different persons. Note the differences in pronunciation.

69.

Get the passages previously dictated, read rapidly, phrase by phrase, with natural intonation. Record this by means of curves.

70.

If possible get someone to read English words or sentences backwards, and take down the sounds, e.g. for *table* let lbiet be dictated. This "nonsense" dictation is useful, as the attention is directed to sounds only and not to meanings.

71.

Have any foreign language dictated to you, and transcribe the passage phonetically.

72.

Get friends to make peculiar noises and see if you can record them in phonetic script. Think how you would write the sound of a kiss, a sniff, a snort, a hiccough, etc.

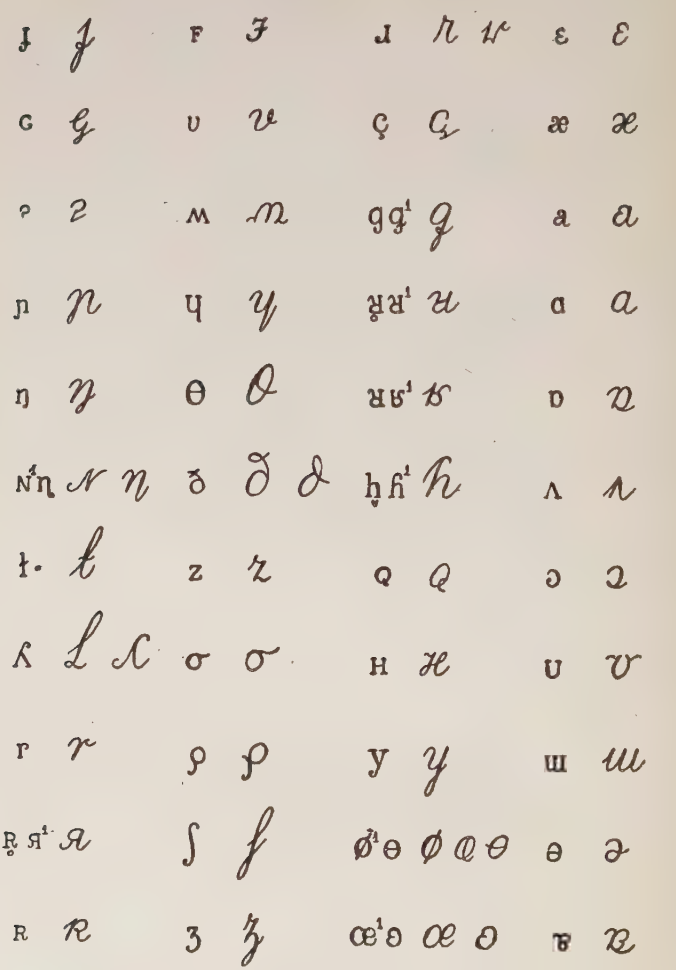
The Main Types of Human Speech-Sounds.

		Bi-labial	Labio-dental	Dental	Retro-flex	Palatal	Velar	Uvular	Glottal
CONSONANTS.	Plosive	p b		t d	ʈ ɖ	c ɟ	k g	q ɢ	ʔ
	Nasal	m	ɱ	n	ɳ	ɲ	ŋ	ɴ	
	Lateral			l ɬ	ɭ	ʎ	(ʟ)		
	Rolled			r	ɽ			ʁ ʀ	
	Fricative	ɸ β ʍ w ɥ (ʃ) (ʒ)	f v	θ ð s z ʃ ʒ ɹ	ʂ ʐ	ç j (ɥ)	(ʍ w) x ɣ	ʁ ʀ	h ɦ ʜ ʢ
VOWELS.	Close	(y yː ü u uː) (ʏ ʊ)				Front iː i yː y* ɪ ʏ*	Mixed ɨː ɨ ü ʉː	Back ɯ† u uː ʊ	
	Half-close	(ø ö o)				e ø*	ë ö əː ə	o	
	Half-open	(ɔ ɔ̈ œ)				ɛ œ*	ë̞ ɔ̈	ʌ ɔ	
	Open					æ	ɐ a	ɑ ɒ ɒː	

Sounds appearing twice on the chart have a double articulation, the secondary articulation being shown by the symbol in brackets. Front vowels with * have lip rounding. The back vowel marked † has no lip rounding. Where consonants are in pairs, the left hand symbol stands for the unvoiced kind.

The position of the retroflex column is not satisfactory, but with the above classification it seemed the best place to put it.

Script Forms of Special Phonetic Letters.



[1] Form employed by the International Phonetic Association.

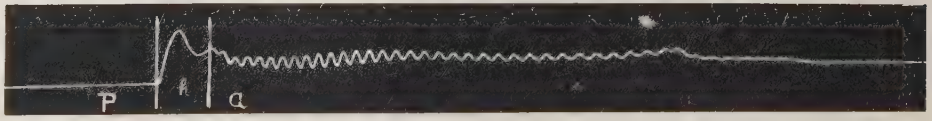
stʂntʂɛ ɾahalʁval ɟø:stɛʃ ɕɛldɔ
pʌrbʌt vittʃõ tʌgra budʐnin
ʁsupravʁ sɔdɛr ɔɔlɣi œʁø ʁoŋ
Oʁalo xɔqa muqaʁoɾ kihuo
xŋɲɛ nũʃmaʎs. paʌɣs dremiŋk
qaʈɑaʁ avɛl
.dɔ nɔO wɪnd ɔn dɔ sɪn sɔ dis-
pɣtɛ, jakõ ɑsykã k il etɛ l
ply fɔr ɾals ɾain vandɔʁɔʁ kam,
embodado en una qraŋ kapa. kɔŋ-
kurdaʁɛ̃ũ ɛ̃ĭŋ ki prime fʁrìɔ kʁ

KYMOGRAPH TRACINGS.

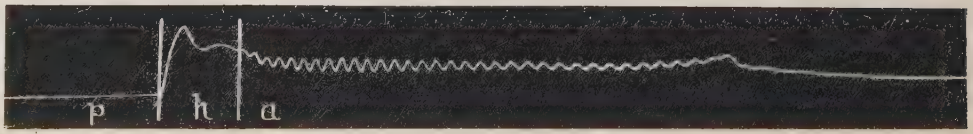
(Made in the Phonetic Laboratory at University College, London.)

Unaspirated pɑ (mouth record).

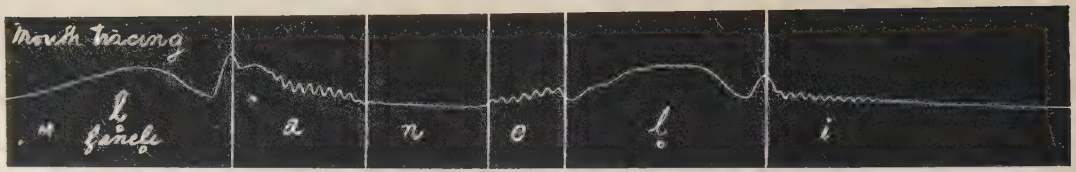
Aspirated $p^{h}ɑ$ (mouth record).



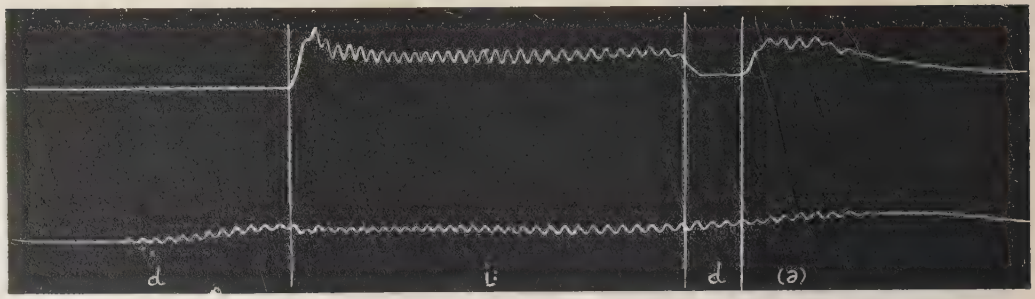
phɑ (mouth ō record).



Mouth record of Llanelly showing unvoiced l̥.



Mouth and larynx record of did *deed*, with voiced "off-glide."



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a vowel is the element in the syllable which carries the tonic pitch + the greatest stress.

1. Voice - a musical modification of the breath.
2. Vowel - a voiced sound in the production of which the breath has free passage thru the mouth (and nose) without friction.
3. Consonant: a speech-sound produced by a complete or partial obstruction of the breath accompanied or unaccompanied by voice.
4. Phonetic consonants not used in English: ŋ θ ð ʃ ʒ ʤ
5. " vowels, new - i: æ; ɑ: ɔ ɔ: ʌ: ə ə:
6. Labials - made with the lips.
7. Dentals - " " " teeth.
8. stress - Force used to emphasize certain syllables.
9. glides - intermediate sounds during the uttering of a word or breath group.

aspiration - an unvoiced glide.

intonation - The rise & fall of musical pitch.

Oral vowels - Produced by passage of air thru mouth only.

nasalization - both oral & nasal passages are opened.

Sonant - Voiced - Cords vibrate

Surd - unvoiced - uttered with the breath

Phonetics - The science which deals with the gymnastics of the organs of speech, both in theory & practise.

Tuesday Feb. 3, 3:30

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